



**NATIONAL BOARD FOR TECHNICAL EDUCATION**

**NATIONAL INNOVATION DIPLOMA (NID)**

**IN**

**ENERGY HEALTH TECHNOLOGY**

**CURRICULUM AND COURSE SPECIFICATION  
PLOT 'B' BIDA ROAD, P.M.B. 2239, KADUNA NIGERIA**

**JUNE 2016**

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## FOREWORD

*This curriculum developed in two parts is for the National Innovation Diploma (NID) Programme in Energy Health Science.*

*The curriculum has been structured in unit courses in line with the provisions of the National Policy on Education (NPE) which makes it mandatory for all institutions to introduce the credit unit system that allows for the transfer of courses completed in one institution to another similar or higher institution.*

*Also, the content of each course has been spelt out in behavioral objectives to enhance the articulation process if the transfer of the credit between institutions is to be meaningful and acceptable to all institutions and for employers to know the behavior of diplomates of the programme seeking entry level employment in industry.*

*The Board's policy that the producers (institutions) who run the programme should initiate the new curriculum based on the guidelines issued by the Board was fully implemented. Critique workshop where representatives of the academic community, professional bodies, users (employers) and practitioners were present also has also taken place.*

*It is the believe of the Board that the new programme is adequate for the level of programme; and if properly taught, it will produce the type of manpower required by the nation at the technician's level provided the resources – qualified teaching staff in number and mix, consumable teaching materials and other facilities are available to teach the programme to students with the correct entry behavior.*

*I wish to express my deep appreciation to the Foundation for Energy Health International, Mgbowo-Awgu, Enugu State Nigeria for initiating the draft, the academic community represented by Universities, Polytechnics, Employers' Associations and other Regulatory bodies for their very valuable contributions to the new curriculum.*

*It is hoped that the new curriculum if properly implemented, will produce the technicians of our dreams.*

*Dr. Masa'udu Adamu Kazaure, mni  
Executive Secretary  
(NBTE)*

## **GENERAL INFORMATION**

### **1.0 Programme Nomenclature:**

National Innovation Diploma (NID) Programme in Energy Health Science.

### **2.0 GOAL:**

The programme is designed to provide the diplomate with the knowledge and skills to support the application of Energy Health Techniques in treatment of ailments.

### **3.0 OBJECTIVES:**

At the end of the programme, the diplomate should be able to:

1. Assist in the practice of energy health in a variety of settings.
2. Demonstrate the relevant skills and values in the practice of energy health.
3. Assist in the design and implementation of energy health treatment plan.
4. Prepare patients for energy health treatment.
5. Set up energy health equipment for treatment
6. Assist in public enlightenment campaign programmes on energy health techniques.
7. Assist people to understand the true nature of illness/disease and the methods for managing them.

### **4.0 ENTRY QUALIFICATIONS:**

The entry requirement into this programme includes the following:

SSCE, GCE O' Level and WASC with five (5) credit passes in English, Mathematics, Physics, Chemistry, Biology

### **5.0 NATIONAL CERTIFICATION**

Trainees who successfully complete all the courses specified in the curriculum table and pass the national examinations will be awarded the following certificate:

National Innovation Diploma in Energy Health Science.

**Note:**

This programme is expected to be in form of session-based training courses of not less than two years for full time and three years part-time.

**6.0 ACCREDITATION**

1. The programme shall be accredited by the National Board for Technical Education before the candidates can be awarded the National Innovation Diploma (NID) in Energy Health Science.
2. Details about the process of accrediting the programme for the award of the NID can be obtained from the *Executive Secretary, National Board for Technical Education, Plot "B", Bida Road, P.M.B. 2239, Kaduna , Nigeria.*

**7.0 GUIDANCE NOTES FOR TEACHERS**

1. The new curriculum is drawn in unit courses.
2. Institutions may, as required, add courses to the minimum guide curriculum
3. The teaching of the theory and practical works should, as much as possible, be integrated. Practical exercises, especially those in professional courses and laboratory works should not be taught in isolation from the theory. For each course, there should be a balance of theory to practical works in the ratio of 30:70

**8.0 CURRICULUM STRUCTURE**

The curriculum of all NID programme consist of four main components. These are:

1. General studies/education
2. Foundation Courses
3. Professional Courses
4. Supervised Industrial Work Experience Scheme (SIWES).

**THEORY:** This aspect consists of the general studies/education, the foundation and the professional courses which shall account for a minimum of 30% of the total contact hours for the programme.

**PRACTICAL CONTENTS;** These are courses, which give students the theory and practical skills needed to practice the field of their calling at the technician level. The component shall account for a minimum of 70% of the total contact hours for the programme.

### **9.0 NID PROGRAMME DURATION**

1. Four semesters of two years full-time.
2. Six semesters of three years- part-time
3. 8 hours per day or 40 hours per week
4. 17 weeks per semester(including one week for registration and one week for examination)

### **ASSESSMENT PROFILE FOR NID ENERGY HEALTH SCIENCE PROGRAMME**

- I. Continuous Assessment:** 60% (Consist of Practical, Tests, Courses Work Assessment, etc)
- II. Examinations:** 40% (Consists of practicals theory, Term paper, Projects, CBT, etc)

## CURRICULUM TABLE

**LEVEL: NID1**

**SEMESTER 1**

| S/N          | COURSE CODE | COURSE TITLE                      | L         | T | P         | CU        | CH PER WEEK | TOTAL HOURS PER SEMESTER | PRE-REQUISITE    |
|--------------|-------------|-----------------------------------|-----------|---|-----------|-----------|-------------|--------------------------|------------------|
| 1            | EHS 101     | General Biology                   | 2         |   | 1         | 3         | 3           | 45                       | O' Level Biology |
| 2            | BCH 121     | Organic & Inorganic Chemistry     | 2         |   | 2         | 4         | 4           | 60                       | Chemistry        |
| 3            | EHS 103     | Mechanics and Heat Energy         | 2         |   | 2         | 4         | 4           | 60                       | Physics          |
| 4            | MAT 101     | Algebra & Elementary Trigonometry | 2         |   | <b>2</b>  | 4         | 4           | 30                       | Mathematics      |
| 5            | CSK 501     | Basics of Communication           | 2         |   | -         | 2         | 2           | 30                       | English          |
| 6            | COM 101     | Introduction to Computer          | 1         |   | -         | 1         | 1           | 15                       |                  |
| 7            | PTY 111     | Human Anatomy 1                   | 2         |   | <b>2</b>  | 4         | 4           | 60                       |                  |
| 8            | PTY 112     | Human Physiology 1                | 2         |   | 2         | 4         | 4           | 60                       |                  |
| 9            | EHS 105     | Man & His Environment             | 2         |   | -         | 2         | 2           | 30                       |                  |
| 10           | EHS107      | Introduction to Genetics          | 2         |   | -         | 2         | 2           | 30                       |                  |
| 11`          | EHS 109     | Introduction to Energy Health     | 2         |   | -         | 2         | 2           | 30                       |                  |
| <b>TOTAL</b> |             |                                   | <b>21</b> |   | <b>11</b> | <b>32</b> | <b>32</b>   | <b>480</b>               |                  |

**LEVEL: NID 1**

**SEMESTER: 11**

| <b>S/N</b> | <b>COURSE CODE</b> | <b>COURSE TITLE</b>                | <b>L</b>  | <b>T</b> | <b>P</b>  | <b>CU</b> | <b>CH</b> | <b>TOTAL HOURS FOR THE SEMESTER</b> | <b>PRE-REQUISITE</b> |
|------------|--------------------|------------------------------------|-----------|----------|-----------|-----------|-----------|-------------------------------------|----------------------|
| 1          | EHS 102            | Biochemistry/Biochemical Science I | 2         | -        | 2         | 4         | 4         | 60                                  |                      |
| 2          | PTY 121            | Human Anatomy 11                   | 2         | -        | 2         | 4         | 4         | 60                                  | PTY 111              |
| 3          | PTY 112            | Human Physiology 11                | 2         | -        | 2         | 4         | 4         | 60                                  | PTY 112              |
| 4          | GNS 121            | Introduction to Sociology          | 2         | -        | -         | 2         | 2         | 30                                  |                      |
| 5          | EHS 104            | Introduction to Psychology         | 2         | -        | -         | 2         | 2         | 30                                  |                      |
| 6          | EHS 106            | Professional Ethics                | 1         | -        | -         | 1         | 1         | 15                                  |                      |
| 7          | EHS 108            | Electricity and Magnetism          | 2         | -        | 2         | 4         | 4         | 60                                  |                      |
| 8          | EHS 110            | Magnetic Energy 1                  | 1         | -        | 2         | 3         | 3         | 45                                  |                      |
| 9          | EHS 112            | Pyramid Energy 1                   | 2         | -        | 1         | 3         | 3         | 45                                  |                      |
|            | <b>TOTAL</b>       |                                    | <b>16</b> | <b>-</b> | <b>11</b> | <b>27</b> | <b>27</b> | <b>405</b>                          |                      |



**LEVELS: NID 11****SEMESTER: 1**

| <b>S/N</b>   | <b>COURSE CODE</b> | <b>COURSE TITLE</b>                    | <b>L</b>  | <b>T</b> | <b>P</b>  | <b>CU</b> | <b>CH</b> | <b>TOTAL HOURS PER SEMESTER</b> | <b>PRE-REQUISITE</b> |
|--------------|--------------------|--|-----------|----------|-----------|-----------|-----------|---------------------------------|----------------------|
| 1            | EHS 201            | Biochemistry / Biochemical Science II` | 2         |          | 2         | 4         | 4         | 60                              |                      |
| 2            | EDP 201            | Entrepreneurship                       | 1         |          | 2         | 3         | 3         | 45                              |                      |
| 3            | STA 111            | Descriptive Statistics                 | 2         |          | -         | 2         | 2         | 30                              |                      |
| 4            | EHS 203            | Astrology Energy Medical Science       | 2         |          | 1         | 3         | 3         | 45                              |                      |
| 5            | EHS 205            | Colour Energy Science 1                | 1         |          | 1         | 2         | 2         | 30                              |                      |
| 6            | EHS 207            | Yoga Energy Science 1                  | 1         |          | 1         | 2         | 2         | 30                              |                      |
| 7            | EHS 209            | Reiki Energy Health 1                  | 1         |          | 1         | 2         | 2         | 30                              |                      |
| 8            | EHS 211            | Sujok Energy Health                    | 2         |          | 1         | 3         | 3         | 45                              |                      |
| 9            | EHS 213            | Magnetic Energy 11                     | 1         |          | 1         | 2         | 2         | 30                              | EHS110               |
| 10           | EHS 215            | Pyramid Energy 11                      | 2         |          | 1         | 3         | 3         | 45                              | EHS 112              |
| <b>TOTAL</b> |                    |  | <b>15</b> |          | <b>11</b> | <b>26</b> | <b>26</b> | <b>390</b>                      |                      |

**LEVEL: NID11****SEMESTER 11**

| <b>S/N</b>   | <b>COURSE CODE</b> | <b>COURSE TITLE</b>                      | <b>L</b>  | <b>T</b> | <b>P</b>  | <b>CU</b> | <b>CH</b> | <b>TOTAL HRS PER SEMESTER</b> | <b>PRE-PREQUISITE</b> |
|--------------|--------------------|--|-----------|----------|-----------|-----------|-----------|-------------------------------|-----------------------|
| 1            | CSK 502            | Project Report (Term paper)              | 2         | -        | 2         | 4         | 4         | 60                            | -                     |
| 2            | EDP 202            | Entrepreneurship                         | 1         | -        | 2         | 3         | 3         | 45                            | EDP 201               |
| 3            | EHS 202            | Reiki Energy Health 11                   | 1         | -        | 1         | 2         | 2         | 30                            | EHS 209               |
| 4            | EHS 204            | Colour Energy Science 11                 | 1         | -        | 1         | 2         | 2         | 30                            | EHS 205               |
| 5            | EHS 206            | Yoga Energy Science 11                   | 1         | -        | 1         | 2         | 2         | 30                            | EHS 207               |
| 6            | EHS 208            | Gem Energy Science 11                    | 2         | -        | 1         | 3         | 3         | 45                            | -                     |
| 7            | EHS 210            | Astrology Energy Science11               | 2         | -        | 2         | 4         | 4         | 60                            | EHS 203               |
| 8            | EHS 212            | Basic Management of Health Care facility | 2         | -        | -         | 2         | 2         | 30                            | -                     |
| <b>TOTAL</b> |                    |  | <b>12</b> | <b>-</b> | <b>10</b> | <b>22</b> | <b>22</b> | <b>330 HRS</b>                |                       |

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** GENERAL BIOLOGY

**COURSE CODE:** **EHS 101**

**CREDIT UNIT:** **3.0**

**COURSE DURATION:** **THEORY – 2HOURS/WEEK; PRACTICAL – 1HOUR/WEEK**

**PRE-REQUISITE:** **NIL**

**GOAL:** **This course is designed to enable the students acquire knowledge and skills on components of living things and their characteristics.**

**General Objectives: On completion of this module:**

- 1.0. Understand the various living things in the environment
- 2.0. Know the general classification of plant kingdom
- 3.0. Know the features of bryophytes, pteridophytes and spermatophytes
- 4.0. Know the classification, identification and preservation of common flowering plants (angiosperm)
- 5.0. Know the features of invertebrate animals
- 6.0. Know the features and major classes of vertebrates
- 7.0. Know the preservation methods of common vertebrates and invertebrates

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |  |   |                           |   |   |  |
|--|--|---|---------------------------|---|---|--|
| <b>COURSE:</b> GENERAL BIOLOGY   |  | <b>CODE:</b> EHS 101  |                           | <b>Credit Unit:</b> 3.0   |   | <b>CONTACT HOURS:</b> 2 – 0 - 1  |
| <b>GOAL:</b> This course is designed to enable the students acquire knowledge and skills on components of living things and their characteristics. |  |   |                           |   |   |  |
| <b>GENERAL OBJECTIVE 1.0:</b> Understand the various living things in the environment  |  |   |                           |   |   |  |
| <b>THEORETICAL CONTENT</b>   |  |   |                           | <b>PRACTICAL CONTENT</b>  |   |  |
| <b>Wk</b>  | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b> | <b>Specific Learning Outcome</b>  | <b>Teachers' Activities</b>   | <b>Learning Resources</b>  |
| 1.   | 1.1 Identify various parts of a microscope and their functions<br><br>1.2 List characteristic of living organisms<br><br>1.3 Define cell.<br><br>1.4 List the functions of various organelles in a cell. | Show various parts of microscope and their functions.<br><br>Explain the characteristics of living organisms.<br><br>Define Cell.<br><br>Explain the functions of various organelles in a cell<br><br>Describe the structure of plant | Class room resources      | 1.1 Identify types of microscope and their components/parts.<br><br>1.2 Identify various parts/components of displayed microscope and their uses.<br><br>1.3 Mount various plant and animal cells under a microscope<br><br>1.4 Identify various organelles that are visible under a compound | Show different types of microscope and their parts.<br><br>Assist student to identify parts of each microscope and their uses.<br><br>Mount the plant and animal cells under microscope for observations.<br><br>Indicate by identification various organelles that are visible under a | - Light and compound microscope<br><br>- Chart of plant and animal cells |

|   |  |   |                                  |  |  |   |
|---|--|---|----------------------------------|--|--|---|
|   | 1.5 Describe the structure of plant and animal cells.<br><br>1.6 State differences between a plant cell and an animal cell.  | and animal cells.<br><br>Explain differences between a plant cell and an animal cell.   |                                  | microscope.<br><br>1.5 Use chart of plant and animal cells drawn from viewing under the electron microscope to differentiate between plant and animal cells. | compound microscope.<br><br>Guide students to differentiate plant and animal cells using charts.   |   |
| <b>GENERAL OBJECTIVE 2.0</b> Know the general classification of plant kingdom |  |   |                                  |  |  |   |
| 2.  | 2.1 List the major groups of the plant kingdom viz:-<br>Thallophytes, Bryophytes and Pteridophytes (Spore bearing plants or Non – flowering plants or Cryptogams)<br>Gymnosperm and Angiosperms (Seed plants or flowering plants or Phanerogams or Spermatophytes) | Explain the major groups of the plant kingdom viz:-<br>Thallophytes, Bryophytes and Pteridophytes (Spore bearing plants or Non flowering plants or Cryptogams)<br>Gymnosperm and Angiosperms (Seed plants or flowering plants or Phanerogams or Spermatophytes) | Marker board                     | 2.1 Identify major group of the plant kingdom using microscope and hand lens where necessary.<br><br>2.2 Use chart to identify classes of algae              | Show how to identify major group of the plant kingdom using microscope and hand lens.<br><br>Guide the students to identify the classes of algae | - Slides, Microscope and sample specimens.<br><br>- Charts, microscopes, magnifying lens and algal specimens. |
| 3.  | 2.2 Identify classes of algae  | Explain the classification of algae   | Marker board<br><br>Marker board | 2.3 Use charts to describe the structure of two common algae<br><br>2.4 Identify the five basic classes of   | Show charts of the five basic classes of algae<br><br>Help students to identify five basic   | - Magnifying lens, microscope and fungal specimens<br><br>- Charts, magnifying lens and fungal                |

|  |  |  |   |  |  |  |
|--|--|--|---|--|--|--|
|  | <p>2.3 Describe the structure of two named common algae.</p> <p>2.4 State five basic classes of fungi.</p> <p>2.5 Describe the structure of two named common fungi.</p> <p>2.6 State the beneficial roles of fungi.</p> <p>2.7 State the beneficial roles of fungi</p> | <p>Describe the structure of two named common algae</p> <p>Explain five basic classes of fungi.</p> <p>Describe the structure of two named common fungi.</p> <p>Explain the beneficial and harmful roles of fungi.</p> | <p>Marker board</p> <p>Marker board</p> | <p>fungi using chart.</p> <p>2.5 Identify structure of two named fungi using charts.</p> | <p>classes of fungi using charts.</p> <p>Assist student to identify the structure of two named fungi using charts.</p> | <p>specimens.</p> <p>Slides of fungi, charts and microscope.</p> |
|--|--|--|---|--|--|--|

|   |   |  |              |  |  |   |
|---|---|--|--------------|--|--|---|
|   |   |  |              |  |  |   |
| <b>GENERAL OBJECTIVE 3.0: know the features of Bryophytes, Pteridophytes and Spermatophytes</b> |   |  |              |  |  |   |
| 4.  | 3.1 List classes of Bryophytes.   | Explain classes of Bryophytes.   | Marker board | 3.1 Identify the features of Bryophytes (e.g. Moss plants and Liverworts) using charts.  | Use charts to identify features of Bryophytes (e.g. Moss plants and Liverworts). | Magnifying lens and sample specimens.           |
|   | 3.2 State the features of Moss plants and Liverworts (Leafy Bryophytes) | Explain the features of Moss plants and Liverworts (Leafy Bryophytes). |              | 3.4 Identify the difference between Moss plants and Liverworts using charts.             | Identify the difference between Moss plants and Liverworts using charts.         | Chart, specimens of moss plants and Liverworts. |
|   | 3.3 Describe the structure of a named Bryophyte.                        | Describe the structure of a named Bryophyte.                           |              | 3.5 Identify the classes of Pteridophytes using charts.                                  | Identify the classes of Pteridophytes using charts.                              | Chart and specimen sample                       |
|   | 3.4 State the differences between Moss plant and Liverworts.            | Explain the differences between Moss plant and Liverworts.             | Marker board | 3.6 Use chart to indicate to the different features of various classes of Pteridophytes. | Use chart to identify the features of various classes of Pteridophytes.          | Chart   |
| 5.  | 3.5 List the classes of Pteridophytes                                   | Explain the classes of Pteridophytes.                                  | Marker board | 3.8 Identify the major differences between Bryophytes and Pteridophytes using            | Identify the major differences between Bryophytes and Pteridophytes.             | Chart   |
|   | 3.6 State the features of various classes of Pteridophytes              | Explain the features of various classes of Pteridophytes               |              | Identify the differences   |  | Chart and specimen samples                      |
|   | 3.7 Describe the  | Describe the   |              |  |  |   |

|    |  |  |             |   |  |                             |
|----|--|--|-------------|---|--|-----------------------------|
| 6. | structure of one named example of Pteridophytes  | structure of one named example of Pteridophytes.                                     | Maker board | chart   | between Cryptogams and Spermatophytes using charts.  | Specimen of the plant.      |
|    | 3.8 State the major differences between Bryophytes and Pteridophytes                               | Explain the major differences between Bryophytes and Pteridophytes.                  | Maker board | 3.9 Identify the differences between Cryptogams and Spermatophytes using charts.                                  | Use chart to indicate the differences between two subdivisions of spermatophytes, Gymnosperms and Angiosperms. | Charts and specimen samples |
|    | 3.9 State difference between Cryptogams and Spermatophytes.  | Explain difference between Cryptogams and Spermatophytes.                            | Maker board | 3.10 Use chart to identify the difference between two subdivisions of spermatophytes, Gymnosperms and Angiosperms | Use of chart to indicate classes of Gymnosperm and Angiosperm.   | Chart and sample specimen   |
|    | 3.10 State the difference between two subdivisions of spermatophytes, Gymnosperms and Angiosperms. | Explain the between two subdivisions of spermatophytes, Gymnosperms and Angiosperms. | Maker board | 3.11 Use of chart to identify classes of Gymnosperm and Angiosperm  | Describe the structure of one example of a Gymnosperm using charts.  | Chart and sample specimen   |
|    | 3.11 List classes of Gymnosperm and Angiosperm.  | Explain the classes of Gymnosperm and Angiosperm.                                    |             | 3.12 Identify the structure of one example of a Gymnosperm using charts   | Guide student to identify the structure of one example of a Angiosperm using charts                            | Chart and sample specimen   |
|    | 3.12 Describe the structure of one example of a Gymnosperm.  | Describe the structure of one example of a Gymnosperm.                               |             | 3.13 Identify the structure of one  | Guide students to identify the structure of one example of a Gymnosperm using charts                           | Chart and sample specimen   |
|    | 3.13 Classify Angiosperm into  | Classify Angiosperm into Dicotyledonous  |             |   | Assist student to identify the various classes of  | Chart and                   |



|  |  |  |  |  |  |                 |
|--|--|--|--|--|--|-----------------|
|  | <p>Dicotyledonous and monocotyledonous plants.</p> <p>3.14 Describe the structure of one example of an Angiosperm.</p> | <p>and monocotyledonous plants.</p> <p>Describe the structure of one example of an Angiosperm.</p> |  | <p>example of a Angiosperm using charts.</p> <p>3.13 Identify the various classes of Gymnosperm and Angiosperm using charts</p> <p>3.14 Describe the structure of a named Bryophytes using charts</p> <p>3.14 Identify the differences Bryophytes and Pteridophytes using charts.</p> <p>3.15 Identify the differences between Cryptogams and Spermatophytes.</p> <p>3.16 Identify the differences between two subdivisions of</p> | <p>Gymnosperm and Angiosperm using charts.</p> <p>Identify the various classes of Gymnosperm and Angiosperm using charts</p> <p>Assist students to identify the structure of a named Bryophytes.</p> <p>Use charts to show the differences between Bryophytes and Pteridophytes.</p> <p>Assist student to bring out differences between Cryptogams and Spermatophytes</p> <p>Differentiate between two subdivisions of spermatophytes, Gymnosperms and</p> | <p>specimen</p> |
|--|--|--|--|--|--|-----------------|

|  |   |  |                      |   |  |  |
|--|---|--|----------------------|---|--|--|
|  |   |  |                      | spermatophytes,<br>Gymnosperms and<br>Angiosperms.  | Angiosperms.   |  |
| <b>GENERAL OBJECTIVE 4.0:</b> know the classification, identification and preservation of common flowering plants (angiosperm) |   |  |                      |   |  |  |
| 7.   | 4.1 Outline the characteristics of common flowering families<br>a. Gramineae<br>e.g Grass<br>b. Palmae e.g Palms<br>c. Liliaceae e.g Onions<br>d. Leguminosae<br>e.g Croton<br>e. Combretaceae<br>e.g Combretum<br>f. Sterculiaceae<br>e.g Cola<br>g. Malvaceae | List the characteristic of the flowering families listed in 4.1. | Class room resources | 4.1 Identify common families of flowers.<br><br>4.2 Observe the use of some basic herbarium Technique during practical exercises.<br><br>4.3 Identify dicot and monocot plants. | <ul style="list-style-type: none"> <li>Identify the common families of flowers with students</li> <li>Illustrate some basic herbarium Technique to student.</li> <li>Display some dicot and monocot plants.</li> </ul> | <p>Botanical garden, card board containing preserved plants, weed album, cupboard</p> <p>Botanical garden, preserved plants,</p> |

|   |  |  |                          |  |  |                          |
|---|--|--|--------------------------|--|--|--------------------------|
| 8.  | <p>e.g Hibiscus<br/>h. Rutaceae<br/>e.g Citrus</p> <p>4.2 Outline the characteristics of following families:<br/>a) Bombacaceae<br/>e.g Bombax<br/>b) Anacardaeae<br/>e.g Cashew nut<br/>c) Mahaceae<br/>e.g Mahogamy<br/>d) Compositas<br/>e.g Tridax</p> <p>4.3 Explain methods of collecting and preserving common flora.</p> | <p>Outline the characteristics of following families:<br/>a) Bombacaceae<br/>e.g Bombax<br/>b) Anacardaeae<br/>e.g Cashew nut<br/>c) Mahaceae<br/>e.g Mahogamy<br/>d) Compositas<br/>e.g Tridax</p> <ul style="list-style-type: none"> <li>• Explain methods of collecting and preserving common flora.</li> </ul> | Classroom and laboratory |  |  | cupboard and weed album. |
| <b>GENERAL OBJECTIVE 5.0:</b> know the features of Invertebrate Animals |  |  |                          |  |  |                          |

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| 9.   | <p>5.1 Classify Animals into invertebrates and vertebrates</p> <p>5.2 State the distinguishing features of the various invertebrates phyla</p> <p>5.3 Identify the following phyla invertebrates:-<br/>Coelenterates<br/>Platyhelminths<br/>Nematodes<br/>Annelids<br/>Molluscs<br/>Arthropods<br/>Echinoderms</p> | <ul style="list-style-type: none"> <li>• Classify Animals into invertebrates and vertebrates</li> <li>• Explain the distinguishing features of the various invertebrates phyla</li> <li>• Explain the following phyla invertebrates:-<br/>Coelenterates<br/>Platyhelminths<br/>Nematodes<br/>Annelids<br/>Molluscs<br/>Arthropods<br/>Echinoderms.</li> </ul> | <p>Classroom Resources</p> <p>Classroom</p> <p>Classroom</p> | <p>5.1 Identify invertebrates and vertebrates animals.</p> <p>5.2 Identify the distinguishing features of invertebrates phyla.</p> <p>5.3 Identify examples of animals in either invertebrate or vertebrate phylum</p> | <ul style="list-style-type: none"> <li>• Show student examples of invertebrates and vertebrates animals.</li> <li>• Guide student to identify the distinguishing features of invertebrate phyla.</li> <li>• Show the animals that fall into either invertebrate or vertebrate phylum</li> </ul> | <p>Magnifying lens</p> <p>Preserved specimens</p> <p>Preserved specimens</p> |
| <p><b>GENERAL OBJECTIVE 6.0</b> know the features and major classes of vertebrates</p> |  |   |  |  |   |  |

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| 10. | <p>6.1 State the characteristic of the Phylum chordata</p> <p>6.2 Outline the characteristics of the following major classes of vertebrates</p> <ul style="list-style-type: none"> <li>- Super class Pisces (class Chondrichthyes</li> <li>- Cartilagenous fish and class osteochthyes</li> <li>- Bony fish).</li> </ul> | <ul style="list-style-type: none"> <li>• Explain the characteristic of the Phylum chordate.</li> <li>• Explain the characteristics of the following major classes of vertebrates <ul style="list-style-type: none"> <li>- Super class Pisces (class Chondrichthyes</li> <li>- Cartilagenous fish and class osteochthyes</li> <li>- Bony fish).</li> </ul> </li> </ul> | <p>Classroom Resources</p> <p>Classroom Resources</p> | <p>6.1 Identify characteristics of the phylum chordate.</p> <p>6.2 Identify the classes of vertebrates</p> <p>6.3 Draw with labeling various classes of vertebrates</p> <p>6.4 Identify the external features of the super class pisces (Cartilagenous and Bony fishes).</p> | <ul style="list-style-type: none"> <li>• Guide student to identify characteristics of the phylum chordata.</li> <li>• Conduct identification of various classes of vertebrates</li> <li>• Draw samples of various classes of vertebrates.</li> <li>• Display the preserved specimens of the super class pisces (Cartilagenous and Bony fishes).</li> <li>• Display the preserved specimen for analysis.</li> </ul> | <p>Preserved Specimens</p> <p>Preserved specimens</p> <p>Preserved specimens</p> <p>Preserved specimen</p> |
| 11. | <p>6.3 Describe the external features of the super class pisces (Cartilagenous and Bony fishes)</p>  | <ul style="list-style-type: none"> <li>• Describe the external features of the super class pisces (Cartilagenous and Bony fishes).</li> </ul>   |   | <p>6.5 Identify the protochordate as a link between invertebrates and vertebrates</p>  | <ul style="list-style-type: none"> <li>• Identify the protochordate as a link between invertebrates and vertebrates .</li> </ul>   | <p>Preserved specimens</p>   |
| 12. | <p>6.4 Describe the external features of the following vertebrate classes</p> <ul style="list-style-type: none"> <li>- Amphibia</li> <li>- Reptilia</li> <li>- Aves</li> </ul>   | <ul style="list-style-type: none"> <li>• Describe the external features of the following vertebrate classes <ul style="list-style-type: none"> <li>- Amphibia</li> <li>- Reptilia</li> <li>- Aves</li> </ul> </li> </ul>  |   | <p>6.6 Identify the adaptive features and life cycle of selected vertebrate.</p> <p>6.7 Draw with labeling some examples of vertebrates.</p>   | <ul style="list-style-type: none"> <li>• Conduct practical identification of the adaptive features and life cycle of selected vertebrate.</li> <li>• Draw with labeling some examples of</li> </ul>  | <p>Preserved specimens</p> <p>Chart and Preserved</p>  |

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|   | <p>– Mammals</p> <p>6.5 Explain the protochordates as link between invertebrates and vertebrates.</p> <p>6.6 Outline the adaptive features and life cycle of selected vertebrate animals from each class.</p>                                       | <p>– Mammals</p> <ul style="list-style-type: none"> <li>• Explain the protochordates as link between invertebrates and vertebrates.</li> <li>• Explain the adaptive features and life cycle of selected vertebrate animals from each class.</li> </ul>                                     |   |  | vertebrates.   | specimens  |
| <b>GENERAL OBJECTIVE 7.0:</b> know the preservation methods of common Vertebrates and Invertebrates |   |  |   |  |  |  |
| 13.   | <p>7.1 Explain preservation of specimen for laboratory use.</p> <p>7.2 Outline the common preservative methods for the invertebrate.</p> <p>7.3 Outline common preservative methods for the vertebrates.</p> <p>7.4 Enumerate the importance of</p> | <ul style="list-style-type: none"> <li>• Explain preservation of specimen for laboratory use.</li> <li>• Explain the common preservative methods for the invertebrate.</li> <li>• Explain common preservative methods for the vertebrates.</li> <li>• Explain the importance of</li> </ul> | <p>Classroom resources</p> <p>Preservation materials</p> <p>Preserved specimen of vertebrates and invertebrates</p> | <p>7.1 Identify common examples of invertebrates and vertebrates</p> <p>7.2 Collect some common examples of invertebrates and vertebrates.</p> <p>7.3 Separate invertebrates and vertebrates animals from the collected samples.</p> | <ul style="list-style-type: none"> <li>• Conduct field trips to identify invertebrates and vertebrates.</li> <li>• Conduct field trip to collect common examples of invertebrates and vertebrates.</li> <li>• Lead in separating invertebrates and vertebrates animals from the</li> </ul> | <p>7.1 Field work and laboratory specimen bottles and containers, components of various fixates</p> <p>7.2 Field work and laboratory specimen bottles component and various fixates</p> <p>7.3 Field work and laboratory specimen bottles, components of various fixatives</p> |
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|  | <p>preservation of specimen for tutorials and practical demonstration in the classrooms and laboratories.</p> | <p>preservation of specimen for tutorials and practical demonstration in the classrooms and laboratories.</p> |  | <p>7.4 Identify the methods of preserving invertebrates</p> <p>7.5 Identify the methods of preserving vertebrates.</p> <p>7.6 Prepare invertebrates for preservation.</p> <p>7.7 Prepare vertebrates for preservation.</p> <p>7.8 Prepare various fixates in the laboratory.</p> <p>7.9 Assemble various fixatives in the laboratory.</p> <p>7.10 Identify the importance of</p> | <p>collected samples.</p> <ul style="list-style-type: none"> <li>• Demonstrate the procedures for preserving invertebrates and vertebrates animals.</li> <li>• Guide student to prepare both invertebrate and vertebrates animals for preservation.</li> <li>• Demeonstrate hwo to prepare fixates in the laboratory.</li> </ul> <p>Assemble various fixatives in the laboratory.</p> <ul style="list-style-type: none"> <li>• Prepare various fixates in the laboratory.</li> <li>• Assemble various</li> </ul> | <p>7.4 Field work, laboratory specimen bottles, components of various fixatives</p> |
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|  |  |  |  | preservation of specimen for tutorials and practical demonstration in the classrooms and laboratories | fixatives in the laboratory. <ul style="list-style-type: none"><li>• Show student the importance of preservation of specimen for tutorials and practical demonstration in the laboratory.</li></ul> |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** ORGANIC AND INORGANIC CHEMISTRY

**COURSE CODE:** BCH 121

**CREDIT UNIT:** 3.0

**COURSE DURATION:** THEORY – 2HOURS/WEEK; PRACTICAL – 2HOURS/WEEK

**PRE-REQUISITE:** **NIL**

**GOAL:** This course is designed to provide the students with knowledge of inorganic and organic chemistry and their application in energy health science.

**General Objectives:** On completion of this course, the student should be able to:

- 1.0 Understand the periodic properties of the main group and transition elements.
- 2.0 Understand the chemistry of the main group elements.
- 3.0 Understand the chemistry of aliphatic compounds.
- 4.0 Understand the chemistry of aromatic compounds.
- 5.0 Know the composition and basic properties of carbon hydrate.
- 6.0 Know the general properties of amino acids and proteins.
- 7.0 Understand the basic properties of lipids.

| PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  |   |  |   |                           |                      |           |
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| COURSE: Organic and Inorganic Chemistry  |   | COURSE CODE: BCH 121   | Credit Unit: 4.0                                  | CONTACT HOURS: 2 – 0 – 2  |                      |           |
| GOAL: This course is design to provide the student with knowledge of ordinary level inorganic and organic chemistry. |   |  |   |                           |                      |           |
| THEORETICAL CONTENT  |   |  |   | PRACTICAL CONTENT         |                      |           |
| GENERAL OBJECTIVE 1.0: Understand the periodic properties of the main group and transition elements.                 |   |  |   |                           |                      |           |
| Wk   | Specific Learning Outcome   | Teachers' Activities   | Resources   | Specific Learning Outcome | Teachers' Activities | Resources |
| 1.   | <p><b>Periodic Table</b></p> <p>1.1 Explain the periodic classification of the representative elements in terms of their electronic configuration.</p> <p>1.2 Explain diagonal relationship in the periodic table (Li, Mg)</p> <p>1.3 Explain the variation of the following properties across the periods and within the groups;<br/>- metallic and non-</p> | <ul style="list-style-type: none"> <li>List the periodic classification of the representative elements in terms of their electronic configuration.</li> <li>Describe the diagonal relationship in the periodic table (Li, Mg).</li> <li>Explain in details the variation of the properties across the</li> </ul> | <p>Class room Resources</p> <p>Periodic Table</p> |                           |                      |           |

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|  | metallic character; atomic and ionic sizes; ionization potential; electron affinity; electron negativity; oxidation states; inertness  | periods and within the groups listed in 1.3.  |  |   |   |   |
| <b>GENERAL OBJECTIVE 2.0:</b> Understand the chemistry of the main group elements. |  |   |  |   |   |   |
|  | <b>Chemistry of the main group elements</b><br>2.1 Describe the occurrence and extraction of the following main group metals e.g. Na, Ca, Sn, Al and Zn.<br><br>2.2 Describe the physical and chemical properties and uses of the representative elements and their compounds. | Explain the occurrence and extraction of the main group metals.<br><br>Explain the physical, chemical and uses of the elements and their compounds. | Class room Resources<br><br>Periodic Table | 2.1 Identify experimentally the following common cations and anions ( e.g. Na <sup>+</sup> , K <sup>+</sup> , Cd <sup>++</sup> , Zn <sup>++</sup> , Al <sup>3+</sup> , Cu <sup>2+</sup> , SO <sub>3</sub> <sup>=</sup> , NO <sub>3</sub> <sup>-</sup> etc | Carry out experiment to identify cations and anions.<br><br>Guide the students to identify the cations and anions experimentally. | Na <sup>+</sup> , K <sup>+</sup> , Cd <sup>++</sup> , Zn <sup>++</sup> , Al <sup>3+</sup> , Cu <sup>2+</sup> , SO <sub>3</sub> <sup>=</sup> , NO <sub>3</sub> <sup>-</sup><br>Bunsen burner |
| <b>GENERAL OBJECTIVE 3.0:</b> Understand the chemistry of aliphatic compounds.     |  |   |  |   |   |   |
|  | <b>Chemistry of aliphatic compounds</b><br>3.1 Explain the general features of aliphatic hydrocarbons.   | List the general features of aliphatic  | Class room Resources<br><br>Periodic Table | 3.1 Prepare ethyl acetate in the laboratory.  | Set up an experiment in the laboratory for the preparation of ethyl   | Ethyl acetate<br>Bunsen burner<br>Water bath  |

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|  | <p>3.2 Describe the general methods of preparation of the following aliphatic compounds; hydrocarbons, alkanols and alkanolic acids.</p> <p>3.3 Describe the characteristic reactions associated with the functional groups in alkanals, alkanols, alkanones and alkanolic acid.</p> <p>3.4 Explain the following types of reactions applied in organic chemistry i.e.<br/> - addition,<br/> - substitution and<br/> - elimination.</p> <p>3.5 Describe methods of identifying ether.</p> <p>3.6 Describe the physical and chemical properties of ethyl</p> | <p>hydrocarbons. Explain the general methods of preparation of the following aliphatic compounds; hydrocarbons, alkanols and alkanolic acids.</p> <p>List the characteristic reactions associated with the functional groups in alkanals, alkanols, alkanones and alkanolic acid.</p> |  | <p>3.2 Report the outcome of the experiment carried out in 3.1 above.</p> <p>3.3 Identify physical and chemical properties of ethyl acetate.</p> <p>3.4 Experiment the use of Synthetic polymers.</p> | <p>acetate. Guide the student to prepare ethyl acetate in the laboratory.</p> <p>Guide students to identify physical and chemical properties of ethyl acetate.</p> <p>Demonstrate the uses of Synthetic polymers</p> |  |
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|   | acetate.<br>3.7 Explain polymerization.<br><br>3.8 Outline the uses of synthetic polymers.   |   |  |   |   |  |
| <b>GENERAL OBJECTIVE 4.0:</b> Understand the chemistry of aromatic compounds. |  |   |  |   |   |  |
| <b>Wk</b>   | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b>                  | <b>Specific Learning Outcome</b>  | <b>Teachers' Activities</b>   | <b>Learning Resources</b>                      |
|   | <b>Aromatic compounds</b><br>4.1 Describe the structures of benzene and its homologues.<br>4.2 Define aromaticity of a compound.<br>4.3 Explain aromaticity.<br>4.4 Describe the physical and chemical properties of aromatic hydrocarbons (especially benzene).<br>4.5 Describe the following reactions of benzene;<br>- Friedel crafts (alkylation or acetylation)<br>- Substitution reactions (nitration, sulphonation, halogenations, etc. | Describe in detail the structures of benzene and its homologues.<br><br>Explain aromaticity of a compound.<br><br>Explain the physical and chemical properties of aromatic hydrocarbons<br><br>Explain the reactions of benzene as in 4.5 | Class room Resources<br><br>Periodic Table | 4.1 Prepare simple monoaze dye in the laboratory.<br><br>4.2 Separate the compounds of dye in 4.9 above using paper chromatography.<br><br>4.3 Report on all the experiments carried out.<br><br>4.4 Use hydrocarbons i.e. solvents, thinners, etc. | Set up an experiment for the preparation of monoaze dye.<br><br>Guide the student to prepare monoaze dye in the laboratory.<br><br>Supervise students to write reports on all experiments carried out.<br><br>Demonstrate the uses of hydrocarbons, i.e. solvents, thinners, etc. | Chemicals source of heat (not a Bunsen burner) |

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|  | <p>- Addition reactions.</p> <p>4.6 Differentiate between the characteristic property of the functional group of aliphatic and aromatic compounds (e.g. C<sub>2</sub>H<sub>5</sub>OH, C<sub>6</sub>H<sub>5</sub>OH, etc)</p> <p>4.7 Describe the preparation of the following derivatives of benzene: phenols, quinines, aldehydes and ketones.</p> <p>4.8 Describe the properties and reactions of the derivatives mentioned in 4.7 above.</p> <p>4.9 Describe the conversion of group via diazonium salt to chloride bromide cyone etc.</p> <p>4.10 Describe the uses of hydrocarbons such as: solvents, thinners, filters, diluents.</p> | <p>Explain difference between the property of the functional group of aliphatic and aromatic compounds</p> <p>List the preparation steps of derivatives of benzene: phenols, aldehydes and ketones.</p> <p>Explain the properties and reactions of the derivatives above</p> <p>Explain the conversion of group via diazonium salt to chloride bromide cyone</p> <p>Explain the uses of hydrocarbons e.g: solvents,</p> |  |  |  |  |
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|  | 4.12 Describe the formation of simple dyes on the basis of reaction of aromatic compounds  | thinners, filters, diluents.<br>Explain the formation of simple dyes on the basis of reaction of aromatic compounds.   |   |   |  |  |
| <b>GENERAL OBJECTIVE 5.0:</b> Know the composition and basic properties of carbon hydrate. |  |  |   |   |  |  |
| <b>Wk</b>  | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>  | <b>Learning Resources</b>                         | <b>Specific Learning Outcome</b>                                    | <b>Teachers' Activities</b>  | <b>Learning Resources</b>                            |
|  | <b>Properties of carbon hydrate</b><br>5.1 Define carbohydrates.<br><br>5.2 Explain carbon hydrates as made up of carbon, hydrogen and oxygen.<br><br>5.3 List sources of carbon hydrates.<br><br>5.4 Classify carbon hydrates into monosaccharide and polysaccharides.<br><br>5.5 Describe the structures of selected | Define Carbohydrate.<br><br>List the elements that made up carbohydrate<br><br>Explain the sources of carbohydrate.<br><br>Explain carbon hydrates as monosaccharide and polysaccharides.<br><br>Explain the | Class room Resources<br><br>Periodic Table Charts | 5.1 Differentiate experimentally reducing from non-reducing sugars. | Set up experiment to determine reducing sugar and non-reducing sugar | Chromatography<br>Column thin layer gas liquid paper |

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|  | members of the groups in 5.4 above.<br>5.5 Describe the general properties of the groups in 5.4 above.  | structures of selected members of the groups in 5.4.<br><br>List the general properties of the groups in 5.4.   |                                    |  |   |   |
| <b>GENERAL OBJECTIVE 6.0:</b> Know the general properties of amino acids and proteins. |   |   |                                    |  |   |   |
| <b>Wk</b>  | <b>Specific Learning Outcome</b>  | <b>Teachers' Activities</b>   | <b>Learning Resources</b>          | <b>Specific Learning Outcome</b>                               | <b>Teachers' Activities</b>   | <b>Learning Resources</b>                 |
|  | <b>Amino acids and proteins</b><br>6.1 Describe the general formular of amino acids.<br><br>6.2 Identify the common amino acids from the general formular.<br><br>6.3 Describe the physical and chemical properties of amino acids.<br><br>6.4 Explain the formation of dipeptides, oligopeptides and polypeptides. | Explain the general formular of amino acids.<br><br>Indicate by identification the common amino acids from the general formular.<br><br>Explain the physical and chemical properties of amino acids.<br><br>Describe the formation of dipeptides, oligopeptides and | Class room Resources<br><br>Charts | Carry out experiment to determine protein using Biuret method. | Set up the experiment to determine protein using Biuret method.<br><br>Determine the presence of protein using Biuret method. | JKjedhal apparatus<br>Amino acid analyzer |



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|  |  | polypeptides.   |  |  |  |  |
|  | 6.5 Explain the forces responsible for maintaining the structure for polypeptides e.g. hydrogen bonding. | Describe the forces responsible for maintaining the structure for polypeptides e.g. hydrogen bonding. |  |  |  |  |
|  | 6.6 Describe the determination process of protein using Biuret method                                    | Explain proteins as made up of amino acids.   |  |  |  |  |
|  | 6.7 Describe proteins as made up of amino acids.   | Explain the various classes of proteins e.g. fibrous and globular proteins.                           |  |  |  |  |
|  | 6.8 List the various classes of proteins e.g. fibrous and globular proteins.                             | Explain the primary, secondary and tertiary structural levels of proteins.                            |  |  |  |  |
|  | 6.9 Describe the primary, secondary and tertiary structural levels of proteins.                          |   |  |  |  |  |
|  | 6.10 Describe protein denaturation.  | Explain protein denaturation.   |  |  |  |  |
|  | 6.11 Explain isoelectric point of proteins and   | Describe isoelectric point  |  |  |  |  |

|   | amino acids.  | of proteins and amino acids.   |                                    |                                      |   |                           |
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| <b>GENERAL OBJECTIVE 7.0:</b> Understand the basic properties of lipids |   |  |                                    |                                      |   |                           |
| <b>Wk</b>   | <b>Specific Learning Outcome</b>  | <b>Teachers' Activities</b>  | <b>Learning Resources</b>          | <b>Specific Learning Outcome</b>     | <b>Teachers' Activities</b>   | <b>Learning Resources</b> |
|   | <b>Properties of lipids</b><br>7.1 Define Lipids.<br><br>7.2 List sources and types of lipids.<br><br>7.3 Identify different types of lipids.<br><br>7.4 Distinguish between fats and oil.<br><br>7.5 Describe the general reactions of lipids e.g. saponification. | Define Lipids.<br><br>Explain sources and types of lipids.<br><br>Explain different types of lipids.<br><br>List the differences between fats and oil.<br><br>Explain the general reactions of lipids e.g. saponification. | Class room Resources<br><br>Charts | 7.1 Test for fats in the laboratory. | Carry out an experiment to test for fat.<br><br>Describe the process of testing for fats. | - Soxhlet apparatus       |

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** MECHANICS AND HEAT ENERGY

**CODE:** EHS 103

**CONTACT HOURS:** 2HRS THEORY AND 2HRS PRACTICAL

**GOAL:** This course is designed to enable the students acquire knowledge and skills to comprehend the basic aspects of Health Education as foundation for Healthful living.

**GENERAL OBJECTIVES:** On Completion of this course, students should be able to:

- 1.0 Understand rotational motion of rigid bodies
- 2.0 Understand the Phenomenon of surface tension.
- 3.0 Understand Periodic motion.
- 4.0 Understand the behavior of fluids in motion.
- 6.0 Know how to construct and use different types of thermometers.
- 6.0 Understand different methods of determining specific heat capacity.
- 7.0 Discuss the application of different modes of heat transfer.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |   |   |   |  |   |  |
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| <b>COURSE:</b> Mechanics and Heat Energy   |   |   |   | Code: EHS 103  | Credit Hours: T-2hrs & P -2hrs  |  |
| <b>GOAL:</b> This course is designed to enable the students acquire knowledge and skills to comprehend the basic aspects of Health Education as foundation for Healthful living. |   |   |   |  |   |  |
| <b>GENERAL OBJECTIVE 1.0:</b> Understand rotational motion of rigid bodies.  |   |   |   |  |   |  |
| <b>Theoretical Content</b>   |   |   |   | <b>Practical content</b>   |   |  |
| Week   | Specific Learning outcomes  | Teacher's activities  | Resources   | Specific Learning outcomes   | Teacher's activities  | Resources  |
| 1-3  | <p>1.1 State the concept of the moment of inertia about an axis.</p> <p>1.2 Describe the expression for moment of inertia of the following bodies:</p> <p>i) A rod<br/>ii) Rectangular plate<br/>iii) Ring<br/>iv) Circular disc<br/>v) Solid and hollow cylinders<br/>vi) A sphere</p> <p>1.3 Explain radius of gyration.</p> <p>1.4 Calculate the radius of gyration for each</p> | <p>Explain the concept of the moment of inertia about an axis.</p> <p>Solve numerical problems using the expressions stated in 1.2</p> <p>Apply the expression in 1.2 in the calculation of kinetic energy and acceleration of rolling and sliding rigid bodies e.g. cylinder sphere, disc, ring etc.</p> <p>Explain radius of gyration</p> <p>Calculate the radius of gyration for each of the</p> | <p>Lecture notes<br/>Rods<br/>Rectangular plate, ring, circular disc, solid cylinder, hollow cylinder sphere.</p> | <p>1.1 Determine experimentally the moment of inertia of a flywheel.</p> <p>1.2 Determine the moment of inertia of a uniform rod using bifilar suspension.</p> <p>1.3 Calculate the radius of gyration for each of the following bodies:</p> <p>i) A rod<br/>ii) Rectangular plate<br/>iii) Ring<br/>iv) Circular disc<br/>v) Solid and hollow cylinders<br/>vi) A sphere.</p> | <p>Set up experiment to determine the moment of inertia of a flywheel.</p> <p>Set up an experiment to determine the moment of inertia of uniform rod using bifilar suspension.</p> <p>Calculate the radius of gyration for each of the bodies in 1.3.</p> | <p>Flywheel of standard pattern with wall support. Mass attached to a length of cord. Vernier caliper stop clock/watch</p> <p>Metre rule.<br/>Two heavy stands and clamps, two threaded corks, metre rule, brass rod, stop clock/watch</p> |

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|  | <p>of the bodies above</p> <p>1.5 Define Torque of a body about an axis.</p> <p>1.6 Define angular momentum of a body about an axis</p> <p>1.7 Describe the relationship between torque <math>\tau</math> and angular momentum (L) i.e. <math>\tau = \frac{dL}{dt}</math> (where t is time).</p> <p>1.8 State the law of conservation of angular momentum.</p> <p>1.9 Explain the reduction in speed of a rotating body when struck by a small mass applying the law of conservation of angular momentum</p> | <p>bodies above.<br/>Explain Torque of a body about an axis.</p> <p>Explain angular momentum of a body about an axis.</p> <p>Establish the relationship between torque <math>\tau</math> and angular momentum (L) i.e. <math>\tau = \frac{dL}{dt}</math> (where t is time)</p> <p>Explain the law of conservation of angular momentum</p> <p>Describe the reduction in speed of a rotating body when struck by a small mass applying the law of conservation of angular momentum.</p> <p>Solve numerical problems of activities already taught</p> |  | <p>1.4 Write the expression for the kinetic energy of rotation of a rigid body.</p> <p>1.5 Calculate moments of inertia about some axes of interest of the following, using the appropriate formulae e.g</p> <ul style="list-style-type: none"> <li>- Uniform rod</li> <li>- Ring</li> <li>-Circular disc</li> <li>-Solid cylinder</li> <li>-Sphere</li> <li>-Rectangular plate</li> </ul> | <p>Illustrate an expression for the kinetic energy of rotation of a rigid body.</p> <p>Calculate moments of inertia about some axes of interest of the various bodies listed in 1.11</p> <p>Solve numerical problems of activities already taught to students</p> |  |
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|   |   | to students.   |  |  |   |  |
| <b>GENERAL OBJECTIVES 2.0: Understand the phenomenon of surface tension</b> |   |  |  |  |   |  |
|   | 2.1 Define phenomenon of surface tension                            | Explain the phenomenon of surface tension.   | Water, mercury etc glass dish, chalk and board | 2.1 Investigate the existence of surface tension using appropriate media   | Use examples such as water from tap, floating of needle on surface of water to demonstrate the existence of surface tension.<br><br>Demonstrate the use of travelling microscope and Torsion balance to carry out experiment on surface tension<br><br>Demonstrate how to determine experimentally the surface tension of a liquid by capillary rise method using torsion | Needle tissue paper<br>Beaker<br>Water tap<br>Lecturer note<br>Laboratory<br>Travelling microscope<br>Set of glass capillary<br>Beaker dilute nitric acid, caustic soda solution distilled water |
|   | 2.2 State the origin of surface tension using the molecular theory. | Explain the origin of surface tension using the molecular theory.  |  | 2.2 Determine experimentally the surface tension of a liquid by capillary rise method using travelling microscope. |   |  |
|   | 2.3 Define the coefficient of surface tension (stating its unit)    | Define coefficient of surface tension.<br><br>Use examples e.g water and mercury etc., to illustrate adhesive and cohesive forces. |  | 2.3 Determine experimentally surface tension of a liquid using a torsion balance.                                  |   |  |
|   | 2.4 Describe adhesive and cohesive forces.                          |  |  | 2.4 Determine the variation of surface tension with temperature using Jaeger's method.                             |   |  |
|   | 2.5 Define angle of contact   | Explain angle of contact   |  | 2.5 Calculate the surface tension of soap solution and soap bubble using the appropriate                           |   |  |
|   | 2.6 Define capillary action, giving examples of everyday situation  | Explain capillary action giving examples of everyday situation   |  |  |   |  |
|   | 2.7 Relate the variation of surface tension with temperature        | Explain variation of surface tension with temperature.   |  |  |   |  |
|   | 2.8 State surface tension with surface energy.                      | Explain surface tension in terms of surface energy.  |  |  |   |  |
|   | 2.9 Relate surface tension to specific                              | Explain relationship of surface tension with   |  |  |   |  |

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|   | latent heat.   | specific latent heat.   |  | equations.<br>2.6 solve variety of numerical problems on the activities above  | solve variety of numerical problems on the activities above.  |  |
| <b>GENERAL OBJECTIVES 3.0: Understand Periodic Motion</b> |  |   |  |  |   |  |
|   | <p>3.1 Define the following:-<br/>i) Periodic motion<br/>ii) Simple harmonic motion.</p> <p>3.2 List examples of objects that perform simple harmonic motion.</p> <p>3.3 Define parameters associated with simple harmonic motion, viz. amplitude (A), period (T), angular velocity (<math>\omega</math>) etc</p> <p>3.4 State expression for the period of oscillation of the following:<br/>(i) a simple pendulum<br/>(ii) compound pendulum<br/>(iii) loaded elastic spring</p> | <p>Explain the following<br/>(i) Periodic motion<br/>(ii) Simple harmonic motion.</p> <p>Give examples of objects performing simple harmonic motion.</p> <p>Define parameters associated with simple harmonic motion, namely: Amplitude (A), period (T), angular velocity (<math>\omega</math>) etc</p> <p>Explain the parameters associated with period of oscillation of the bodies listed in 3.4.</p> <p>Explain the expression for the period of oscillation of the following:<br/>i) a simple pendulum<br/>ii) compound pendulum</p> |  | <p>3.1 Determine 'g' (acceleration due to gravity) experimentally using:<br/>i) Compound pendulum<br/>ii) loaded spiral spring<br/>iii) loaded cantilever.</p> | <p>Demonstrate how to determine acceleration due to gravity 'g' using the following:</p> <ul style="list-style-type: none"> <li>- compound pendulum</li> <li>- loaded spiral spring and,</li> <li>- loaded cantilever.</li> </ul> | <p>For 3.6 (i) knitting needle, meter rule with holes drilled at equal interval, stop clock/watch</p> <p>For 3.6 (ii) spiral spring slotted weights stop clock, retort stand.</p> <p>For 3.6 (iii) loaded tube, meter rule clamp, stop clock/watch</p> |

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|   | <p>3.5 Draw the graph of potential energy, kinetic energy, total kinetic energy against distance from an equilibrium position</p> <p>3.6 Calculate velocities of bodies in periodic and simple harmonic motion when other parameters are known.</p> <p>3.7 Solve some simple numerical problems applying the formulae for the period of oscillation for the bodies listed in 3.4</p> | <p>iii) Loaded elastic spring<br/>Draw the graph of potential energy, kinetic energy, total kinetic energy against distance from an equilibrium position</p> <p>Calculate velocities of bodies in periodic and simple harmonic motion when other parameters are known.</p> <p>Solve some simple numerical problems applying the formulae for the period of oscillation for the bodies listed in 3.4</p> |  | <p>3.2 Draw the graph of potential energy, kinetic energy, total kinetic energy against distance from an equilibrium position</p> <p>3.3 Calculate velocities of bodies in periodic and simple harmonic motion when other parameters are known</p> <p>3.4 Solve numerical problems applying the formulae for the period of oscillation for the bodies listed in 3.4</p> | <p>Draw the graph of potential energy, kinetic energy, total kinetic energy against distance from an equilibrium position</p> <p>Calculate velocities of bodies in periodic and simple harmonic motion when other parameters are known.</p> <p>Solve numerical problems applying the formulae for the period of oscillation for the bodies listed in 3.4.</p> |   |
| <b>GENERAL OBJECTIVES 4.0: Understand the behaviour of fluids in motion</b> |  |   |  |   |   |   |
|   | <p>4.1 Define the following terms: Atom, molecule, Avogadro constant, Relative molecular mass, Molar mass, Molar volume and Standard Temperature and</p>   | <p>Give definition of the following terms: Atmn, Molecule, Avogadro constant, Relative molecular mass, Mole, Molar mass, Molar volume and Standard Temperature and Pressure (S.T.P).</p>  |  | <p>4.1 Identify Brownian motion while watching the movement of dust or smoke particles.</p>   | <p>Demonstrate Brownian motion by asking the students to watch the movement of dust or smoke particles.</p>   | <p>Boyles and Charles Law Apparatus</p> |



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|  | <p>Pressure (S.T.P).</p> <p>4.2 Differentiate between:</p> <p>(1) Number of moles, number of molecules and Avogadro's constant</p> <p>(ii) Number of moles, mass of the gas and molar volume.</p> <p>4.3 State the assumption of the kinetic theory of gases.</p> <p>4.4 Define Brownian motion.</p> <p>4.5 Define Maxwellian distribution of velocities (Quantitatively)</p> <p>4.6 Define the following terms:</p> <ul style="list-style-type: none"> <li>➤ The most probable mean speed.</li> <li>➤ The mean speed and the mean square speed</li> </ul> | <p>Differentiate between</p> <p>(I) number of moles; number of molecules and Avogadro constant.</p> <p>(II) Number of moles, mass of the gas and molar volume.</p> <p>Explain the assumptions of kinetic theory of gases.</p> <p>Explain Brownian motion.</p> <p>Explain maxwellian distribution of velocities (Quantitatively)</p> <p>Explain the following terms:</p> <ul style="list-style-type: none"> <li>➤ The most probable mean speed.</li> <li>➤ The mean speed and the mean square speed</li> </ul> |  | <p>4.2 Verify the various gas laws experimentally using the appropriate apparatus meant for the gas laws i.e. Charles and Boyles laws.</p> | <p>Demonstrate the use of Boyles and Charles laws apparatus before asking students to verify the law with apparatus.</p> |  |
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|  | <p>4.7 Derive the expression for the pressure exerted by an ideal gas AS<br/> <math>P = \frac{1}{3}PC^2</math><br/> = density.<br/> = mean samara velocity</p> <p>Explain the equation of state of an ideal gas using the kinetic theory.</p> <p>4.8 State Boyles and Charles laws.</p> <p>4.11 Distinguish between real and ideal gas</p> | <p>State the expression for the pressure exerted by an ideal gas AS <math>P = \frac{1}{3}PC^2</math><br/> = density.<br/> = mean samara velocity.<br/> Show graphically the relationship of Kinetic equation of a gas to its temperature.</p> <p>Explain the equation of state of an ideal gas using the kinetic theory.</p> <p>Explain Boyles and Charles laws.</p> <p>Explain differences between real and ideal gases.</p> |           | <p>4.3 Relate the Kinetic energy of a gas to its temperature using graphs of diagram.</p> <p>4.4 Derive the equation of state of an ideal gas using the kinetic theory.</p> <p>4.5 Carry out appropriate experiment to show how Boyle's law and Charles law work.</p> | <p>Relate the Kinetic energy of a gas to its temperature using graphs of diagram.</p> <p>Derive the equation of state of an ideal gas using the kinetic theory.</p> <p>Demonstrate how Boyle's law and Charles law work.</p> |   |
| <b>GENERAL OBJECTIVES 5.0: Know how to construct and use different types of thermometers</b> |  |   |           |   |  |   |
|  | <p>5.1 Define temperature using concept of thermal equilibrium.</p> <p>5.2 Define temperature of thermometric properties, length of liquid column, pressure of a gas under constant volume, resistance of</p>  | <p>Define temperature using concept of thermal equilibrium.</p> <p>Explain temperature of thermometric properties, Length of liquid column, pressure of a gas under constant volume, resistance of a wire emf of thermocouple, radiation</p>  | classroom | <p>5.1 Identify the different types of thermometers.</p> <p>5.2 Identify the following types of thermometers<br/> -Liquid in glass thermometer (choice of</p>   | <p>Provide different types of thermometer in 5.2 and first allow students to identify them using their previous knowledge of thermometer</p>   | <p>Liquid in glass thermometer (Choice of appropriate liquid)</p> <p>Resistance thermometer<br/> thermocouple<br/> Pyrometers<br/> clinical</p> |

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|  | a wire emf of thermocouple, radiation from a hot body.                                     | from a hot body.  |  | appropriate liquid)<br>-Resistance thermometer<br>-Thermocouple<br>- Pyrometers<br>- Clinical thermometer<br>- Minimum and Maximum thermometer<br>-etc |   | thermometer minimum and maximum thermometer |
|  | 5.3 Define various temperature scales e.g. Celsius scales, Kelvin scales, ideal gas scale. | Explain different temperature scales e.g. Celsius scales, Kelvin scales, ideal gas scale. |  | 5.3 Convert measurements in Celsius scale to Kelvin scale.   | Convert measurements in Celsius scale to Kelvin scale.                              |   |
|  | 5.4 Convert measurements in Celsius scale to Kelvin scale.                                 | Illustrate how to convert measurements in Celsius scale to Kelvin scale.                  |  | 5.4 Compare the ideal gas scale and other scales.  | Compare the ideal gas scale and other scales.                                       |   |
|  | 5.5 Compare the ideal gas scale and other scales.  | Compare the ideal gas scale and other scale.  |  | 5.5 Identify various types of thermometers and their characteristics.  | Guide students to identify various types of thermometers and their characteristics. |   |
|  | 5.6 List the basic fixed point on international temperature scale.                         | Explain the basic fixed point on international temperature scale.                         |  |  |   |   |
|  | 5.7 List various types of thermometers and their characteristics.                          | Explain with example the various types of thermometers and their characteristics.         |  |  |   |   |
|  | 5.8 Describe the appropriate uses of various   | Explain the appropriate uses of various types of thermometers                             |  |  |   |   |

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|  | thermometers.  |   |           |   |   |  |
| <b>General Objectives 6.0 Understand the different methods of determining Specific Heat Capacity (S.H.C)</b> |  |   |           |   |   |  |
|  | <p>6.1 State Newton's Law of cooling i.e.<br/> <math>\frac{d\theta}{dt} = K S (Q - Q_r)</math></p> <p>where Q is the body's temperature,<br/> S is the area of the body's surface.<br/> Q<sub>r</sub> is temperature of its surrounding<br/> Q donates heat lost from the body.</p> <p>6.2 Define cooling correlate in measurements of heat quantity</p> | <p>Explain Newton's law of cooling i.e.<br/> <math>\frac{d\theta}{dt} = K S (Q - Q_r)</math></p> <p>where Q is the body's temperature<br/> S is the area of the body's surface.<br/> Q<sub>r</sub> is temperature of its surrounding<br/> Q donates heat lost from the body.</p> <p>Explain cooling correlation in measurements of quantity of heat</p> | Classroom | <p>6.1 Perform an experiment to determine specific heat capacity of solid and liquid using electrical methods.</p> <p>6.2 Perform appropriate experiment to determine specific heat capacity of liquid by continuous flow method.</p> <p>6.3 Carry out an appropriate experiment in a group project in the laboratory to verify Newton's law of cooling.</p> <p>6.4 Apply cooling correction in the heat experiment which is done in a group project in</p> | <p>Conduct an experiment to determine specific heat capacity of solid and liquid using electrical methods.</p> <p>Conduct an experiment to determine specific heat capacity of liquid by continuous flow method.</p> <p>Demonstrate how to verify Newton's law of cooling experimentally in a group project.</p> <p>Demonstrate how to apply cooling correction in the heat experiment which is done in a group</p> | <p>Calorimeter</p> <p>Heater</p> <p>Thermometer</p> <p>Stop clock</p> <p>Ammeter</p> <p>Voltmeter</p> <p>Source of EMF</p> <p>Calender and Barnes apparatus</p> <p>Copper calorimeter with Lid and supported corks inside a double walled vessel containing cold water between the walls for group project</p> <p>Stirrer made of copper wire.</p> <p>Paraffin beaker.</p> <p>Resistance thermometer</p> |

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|  |  |   |  | 6.3 above.  | project  |  |
| <b>General Objectives 7.0 Understand the application of different modes of heat transfer</b> |  |   |  |   |  |  |
|  | 7.1 Explain heat transfer.                                     | Explain heat transfer                                     |  | 7.1 Carry out appropriate experiment to determine thermal conductivity of copper using Searle's method        | Demonstrate how to determine thermal conductivity of copper using Searle's method. | Standard form of Searle's apparatus with steam heater. |
|  | 7.2 Explain thermal conductivity of a material                 | Explain thermal conductivity of a material.               |  |   |  | Beater<br>Caliper                                      |
|  | 7.3 State Stefan's law of radiation.                           | Explain Stefan's law of radiation.                        |  |   |  | Laboratory form of Lees' Disc apparatus,               |
|  | 7.4 Describe green-house effect and its everyday applications. | Explain green-house effect and its everyday applications. |  | 7.2 Carry out appropriate experiment to determine thermal conductivity of ebonite by using Lee's Disc method. | Demonstrate how to determine thermal conductivity of ebonite by Lee's Disc method. | Stop clock   |
|  | 7.5 Describe black body radiation.                             | Explain black body radiation.                             |  |   |  | Screw gauge.   |

**PROGRAMME:** National Innovation Diploma In Energy Health Technology  
**COURSE:** ALGEBRA AND ELEMENTARY TRIGONOMETRY  
**CODE:** MTH 101  
**DURATION:** HOURS/WEEK: L – 2, T – 2, P – 0 (4Hrs/Week or 60HHrs/Semester)  
**UNITS:** 2 Units

**GOAL:** This course is designed to enable students acquire knowledge and problem solving skills in Algebra and Trigonometry.

**GENERAL OBJECTIVES:** On completion of this course, the students should be able to:-

- 1.0 Understand laws of indices and their applications in simplifying algebra expressions.
- 2.0 Understand theory of logarithms surds and their applications in manipulating expression.
- 3.0 Understand principles underlying the construction of charts and graphs.
- 4.0 Know the different methods of solving quadratic equations.
- 5.0 Understand permutations and combinations.
- 6.0 Understand the concept of set theory.
- 7.0 Understand the properties of arithmetic and geometric progressions.
- 8.0 Understand the binomial theorem and its application in the expansion of expressions and in approximations.
- 9.0 Understand the basic concepts and manipulation of vectors and their applications to the solutions of problems.
- 10.0 Know the concept and solve quadratic equations with two unknown variables.
- 11.0 Understand the concept of trigonometric functions and apply them in solving problems.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |  |   |                                    |                                   |                             |                 |
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| <b>COURSE:</b> Algebra and Elementary Trigonometry   |  |   | <b>COURSE CODE:</b> MTH 101        |                                   | <b>CONTACT HOURS:</b> 2-2-0 |                 |
| <b>GOAL:</b> This course is designed to enable students acquire knowledge and problem solving skills in Algebra and Trigonometry |  |   |                                    |                                   |                             |                 |
| <b>General Objective 1.0:</b> Understand laws of indices and their applications in simplifying algebraic expressions             |  |   |                                    |                                   |                             |                 |
| <b>Theoretical Content</b>   |  |   |                                    | <b>Practical Content</b>          |                             |                 |
| <b>Week</b>  | <b>Specific Learning Outcomes</b>  | <b>Teacher's Activities</b>   | <b>Resource</b>                    | <b>Specific Learning Outcomes</b> | <b>Teacher's Activities</b> | <b>Resource</b> |
|  | 1.1 Define index.<br><br>1.2 Establish the laws of indices.<br><br>1.3 Solve simple problems using the laws of indices                             | Illustrate with examples the laws of indices and their applications in simplifying algebraic expressions. | Chalkboard, Textbooks, Calculators |                                   |                             |                 |
| <b>General Objective 2.0:</b> Understand the theory of logarithms, surds and their applications in manipulating expression       |  |   |                                    |                                   |                             |                 |
|  | 2.1 Define logarithm.<br><br>2.2 Establish the four basic laws of logarithm.<br><br>2.3 Solve simple logarithm problems.<br><br>2.4 Define natural | Teach students to solve logarithmic and surd related problems   | Chalkboard, Textbooks, Calculators |                                   |                             |                 |

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|  | <p>logarithms and common logarithms.</p> <p>2.5 Define characteristic and mantissa.</p> <p>2.6 Read the logarithmic table for given numbers.</p> <p>2.7 Simplify numerical expressions using log tables e.g.<br/> <math>18D = 3 \times 4 \times 2 \times \Lambda</math><br/> MB,<br/> find D when <math>J = 0.935</math>,<br/> e.g. <math>\theta = 35</math>, <math>P = 1.6</math><br/> <math>106</math>, <math>C = 55</math>, <math>M = 0</math><br/> <math>0025</math>. <math>\pi = 3.142</math>.</p> <p>2.8 Apply logarithm in solving non-linear equations.<br/> e.g. <math>y = ax^n</math>; <math>\log y = \log a + n \log x</math>; <math>y = bcx = \log y = \log b + x \log c</math>;<br/> <math>Y = a + bx^n</math> <math>B \log(Y - B D) = \log b + n \log x</math>.</p> <p>2.9 Define surds.</p> |  |  |  |  |  |
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|  | 2.10 Reduce a surd into its simplest form.<br>2.11 Solve simple problems on surds.   |   |                                    |  |  |  |
| <b>General Objective 3.0:</b> Understand the principles underlying the construction of charts and graphs |  |   |                                    |  |  |  |
|  | 3.1 Explain construction of graphs.<br><br>3.2 Construct graphs of functions fractions such as $Y = ax + b$ , $n = 1, 2$ , $Y = CST$ , $(a+x)$ , $Y = axk$ , including cases of symbols.<br><br>3.3 Describe how to determine laws from experimental data<br><br>3.3 Apply knowledge from 3.1 and 3.2 in the determination of laws from experimental data. | Ask the students to draw graphs of functions  | Chalkboard, Textbooks, Calculators |  |  |  |
| <b>General Objective 4.0:</b> Know the different methods of solving quadratic equations                  |  |   |                                    |  |  |  |
|  | 4.1 Solve quadratic equations by factorization.<br><br>4.2 Solve quadratic equations by  | Solve quadratic equations using different methods e.g.<br>- By factorization<br>- By completing | Chalkboard, Textbooks, Calculators |  |  |  |

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|  | <p>completing squares method.<br/>4.3 Solve quadratic equations by formula.</p> <p>4.4 Determine the Roots of given quadratic equation.</p> <p>4.5 Form equations whose roots are given in different methods.</p>   | <p>squares<br/>- By use of formulae<br/>Solve examples on the determination of roots of any given quadratic equation.</p> <p>Illustrate how to form equations whose roots are given in different methods</p> |   |  |  |  |
| <b>General Objective 5.0:</b> Understand permutations and combinations |   |  |   |  |  |  |
|  | <p>5.1 Define Permutation.</p> <p>5.2 State examples of Permutations.</p> <p>5.3 Define combination.</p> <p>5.4 State examples of Combination.</p> <p>5.5 Establish the theorem <math>nPr = \frac{n!}{(n-r)!}</math> giving examples e.g. number of ways of</p> | <p>Solve exercises on permutation and combination for students to practice.</p>  | <p>Chalkboard, Textbooks, Calculators</p> |  |  |  |

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|  | collecting two out of 8 balls.  |   |  |  |  |  |
| <b>General Objective 6.0:</b> Understand the concept of set theory |   |   |  |  |  |  |
|  | 6.1 Establish $nCr = nCn$<br>B r.   | Solve exercises on set theory for students to practice.   | Chalkboard,<br>Textbooks,<br>Calculators |  |  |  |
|  | 6.2 Define sets, subsets, and nullsets.                                       | Give definition of sets, subsets and nullsets.  |  |  |  |  |
|  | 6.3 Define union, inter-section and completion of sets.                       | Explain union, inter-section and completion of sets   |  |  |  |  |
|  | 6.4 Draw Venn diagrams to demonstrate the concepts in 6.1, 6.2 and 6.3 above. | Illustrate how to draw Venn diagrams to demonstrate the concepts of sets, subsets null sets as well as union, inter-section and completion of sets. |  |  |  |  |
|  | 6.5 Calculate the size or number of elements in a given set.                  | Illustrate how to calculate the size or number of elements in a given set.  |  |  |  |  |

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| <b>General Objective 7.0:</b> Understand the properties of arithmetic and geometric progressions |   |   |                                    |  |  |  |
|  | <p>7.1 Define an Arithmetic progression (A.P.)</p> <p>7.2 Obtain the formula for nth term and the first n terms of an A.P.</p> <p>7.3 Give examples of 7.2 above e.g. find the 20<sup>th</sup> term of the series e.g. <math>2 + 4 + 6 + \dots</math>. Find also the series of the first 20 terms.</p> <p>7.4 Define a geometric progression (G.P.)</p> <p>7.5 Obtain the formula for the nth term and the first n terms of a geometric series.</p> <p>7.6 State examples of 7.5 above e.g. given these sequences <math>1/3, 1, 3</math> find the 20th term and hence the</p> | Guide students to apply progression to solve problems | Chalkboard, Textbooks, Calculators |  |  |  |

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|   | <p>sum of the 1st 20 terms.</p> <p>7.7 Define Arithmetic Mean (AM) and Geometric Mean (G.M.)</p> <p>7.8 Define convergence of series.</p> <p>7.9 Define divergence of series.</p>   |   |  |  |  |  |
| <p><b>General Objective 8.0:</b> Understand the binomial theorem and its application in the expansion of expressions and in approximations.</p> |   |   |  |  |  |  |
|   | <p>8.1 Explain the method of mathematical induction.</p> <p>8.2 State the binomial theorem for a positive integral index.</p> <p>8.3 Expand expressions of the forms <math>(x + y)^2</math>, <math>(x^2 + 1)^n</math> applying binomial theorem.</p> <p>8.4 Find the coefficient of a particular term in the expansion of</p> | <p>State the importance and application of the binomial theorem.</p> <p>Prove the binomial theorem for a positive integral index.</p> <p>Expand expressions of the forms <math>(x + y)^2</math>, <math>(x^2 + 1)^n</math> applying binomial theorem</p> | <p>Recommend textbooks, Chalk/Chalkboard, Duster, Charts, etc.</p> |  |  |  |

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|   | <p>simple binomial expressions.</p> <p>8.5 Find the middle term in the expansion of binomial expression.</p> <p>8.6 State the binomial theorem for a rational index.</p> <p>8.7 Expand expressions of the form:<br/> <math>(1 + x)^{-1}</math>, <math>(1 + x)^2</math>, <math>(1 + x)^{-a}</math> applying binomial theorem</p> <p>8.8 Expand and approximate expressions of the type <math>(1.001)^n</math>, <math>(0.998)^n</math>, <math>(1 + x)^2</math>, <math>(1 + x)^a</math> to a stated degree of accuracy applying scalar expressions.</p> |  |  |  |  |  |
| <p><b>General Objectives 9.0:</b> Understand the basic concepts and manipulation of vectors and their application to the solutions problems</p> |  |  |  |  |  |  |
|   | <p>9.1 State the definitions and representations of vectors.</p>   | <p>Apply the techniques of vectors to solve various problems</p> | <p>Recommend textbooks, Chalk/Chalkboard, Duster, Charts, etc.</p> |  |  |  |

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|  | <p>9.2 Define a position vector.</p> <p>9.3 Define unit vector.</p> <p>9.4 Explain scalar multiple of a vector.</p> <p>9.5 List the characteristics of parallel vectors.</p> <p>9.6 Identify quantities that may be classified as vector e.g. displacement, velocity, acceleration, force, etc.</p> <p>9.7 Compute the modulus of any given vector up to 2 and 3 dimensions.</p> <p>9.8 State the parallelogram law in solving problems including addition and subtraction of vectors.</p> |  |  |  |  |  |
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| <p>9.9 Apply the parallelogram law in solving problems including addition and subtraction of vectors.</p> <p>9.10 Explain the concept of components of a vector and the meaning of orthogonal components.</p> <p>9.11 Resolve a vector into its orthogonal components.</p> <p>9.12 List characteristics of coplanar localized vectors.</p> <p>9.13 Define the resultant or composition of coplanar vectors.</p> <p>9.14 Compute the resultant of coplanar forces acting at a point using algebraic</p> |  |  |  |  |  |
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|  | <p>and graphical methods.</p> <p>9.15 Apply techniques of resolution and resultant to the solution of problems involving coplanar forces.</p> <p>9.16 Apply vectoral techniques in solving problems involving relative velocity.</p> <p>9.17 State the scalar product of two vectors.</p> <p>9.18 Compute the scalar product of given vectors.</p> <p>9.19 Define the cross product of two vectors.</p> <p>9.20 Calculate the direction ratios of given vectors.</p> <p>9.21 Calculate the angle between two</p> |  |  |  |  |  |
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|  | vectors using the scalar product.  |   |                                    |  |  |  |
| <b>General Objective 10.0</b> : Know the concept and solve quadratic equation with two unknown variables |  |   |                                    |  |  |  |
|  | <p>10.1 Explain the concept of equation, ie. <math>A = B</math> where <math>A</math> and <math>B</math> are expressions.</p> <p>10.2 List different types of equations:-<br/>Linear, quadratic, cubic, etc.</p> <p>10.3 State examples of linear simultaneous equations with two unknowns and simultaneous equations with at least one quadratic equation.</p> <p>10.4 Apply algebraic and graphical methods in solving two simultaneous equations involving a linear equation and a quadratic equation.</p> | Guide students to solve various equations as indicated in section 10.1 to 10.7. | Chalkboard, Textbooks, Calculators |  |  |  |

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|  | <p>10.5 Apply the algebraic and graphical methods in solving two simultaneous quadratic equations.</p> <p>10.6 Define a determinant of <math>n</math>th order.</p> <p>10.7 Apply determinants of order 2 and 3 in solving simultaneous linear equations.</p> |   |  |  |  |  |
| <p><b>General Objective 11.0</b> Understand the concept of trigonometric functions and apply them in solving problems.</p> |  |   |  |  |  |  |
|  | <p>11.1 Define the basic trigonometric ratios, sine, cosine and tangent of an angle.</p> <p>11.2 Derive the other trigonometric ratios; cosecant, secant and cotangent using the basic trigonometric</p>   | <p>Define the trigonometric ratios and identities</p> <p>Derive the trigonometric ratios and identities</p> | <p>Chalkboard, Textbooks, Calculators.</p> |  |  |  |

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| <p>ratios in 11.1 above.</p> <p>11.3 Derive identities involving the trigonometric ratios of the form;<br/> <math>\cos^2 \theta + \sin^2 \theta = 1</math>,<br/> <math>\sec^2 \theta = 1 + \tan^2 \theta</math>,<br/> etc.</p> <p>11.4 Derive the compound angle formulae for <math>\sin(A+B)</math>, <math>\cos(A+B)</math> and <math>\tan(A+B)</math>.</p> |  |  |  |  |  |
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**PROGRAMME :** National Innovation Diploma In Energy Health Technology  
**COURSE :** BASICS OF COMMUNICATION  
**CODE :** CSK 501  
**DURATION :** ONE SEMESTER  
**UNITS : 2**

**GOAL :** This course is designed to equip the trainee with a rudimentary knowledge of communication.

**GENERAL OBJECTIVES:** On completion of this course the trainee should:

- 1.0 Know different methods of communication.
- 2.0 Know the directions of communication flow.
- 3.0 Know the barriers to effective communication.
- 4.0 Know how to communicate in different fora.

| <b>PROGRAMME: National Innovation Diploma In Energy Health Technology</b>                               |  |  |                             |   |  |                          |
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| <b>COURSE: BASICS OF COMMUNICATION</b>  |  |  | <b>COURSE CODE: CSK 501</b> |   | <b>CONTACT HOURS: 2hrs/week</b>  |                          |
| <b>GOAL:</b> This course is designed to equip the trainee with a rudimentary knowledge of communication |  |  |                             |   |  |                          |
| <b>Course Specification: Theoretical</b>  |  |  |                             | <b>Practical Content</b>  |  |                          |
| <b>General Objective 1.0:</b> Know different methods of communication.                                  |  |  |                             |   |  |                          |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>                  | <b>Teacher's Activities</b>                          | <b>Resource</b>             | <b>Specific Learning Outcomes</b>   | <b>Teacher's Activities</b>  | <b>Resource</b>          |
|   | 1.1 Define communication                           | Analyze the concept of communication.                |                             | 1.1 Analyze the communication process.                                    | Facilitate the Analysis  | Provide guidance         |
|   | 1.2 Explain the different methods of communication | Analyze different methods of communication           |                             | 1.2 Classify oral, written and non-verbal communication.                  | Provide Guidance in classification of oral, written and non-verbal communication |                          |
|   |  |  |                             | 1.3 Demonstrate non-verbal communication in given hypothetical situations | Demonstrate non-verbal communication in given hypothetical situations.           |                          |
| <b>General Objective: 2.0</b> Know the directions of communication flow.                                |  |  |                             |   |  |                          |
|   | 2.1 Explain the directions of communication.       | Analyze the concepts of directions of communication. |                             | 2.1 Describe internal and external communication using real-life          | Demonstrate internal and external communication using real-life situations       | Communication flow chart |

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|   | 2.2 Classify communication variables.  | Explain the classification of communication variables.                                   |  | situations.<br>2.3 Describe how content, source, channel, etc, affect communication.   | Demonstrate how content, source, channel, etc, affect communication.                 |  |
| <b>General Objective:</b> 3.0 Know the barriers to effective communication. |  |  |  |  |  |  |
|   | 3.1 Explain the barriers to effective communication.   | Analyze the barriers to effective communication.   |  | 3.1 Describe the barriers to effective communication in given hypothetical situations. | Illustrate the barriers to effective communication in given hypothetical situations. |  |
|   | 3.2 Explain the impact of certain variables on effective communication                       | Explain the impact of certain variables on effective communication.                      |  | 3.2 Describe how status, environment, power, etc affect effective communication        | Give analysis how status, environment, power, etc affect effective communication     |  |
| <b>General Objective:</b> 4.0 Know how to communicate in different forms    |  |  |  |  |  |  |
|   | 4.1 Explain the procedure for communicating in debates, meetings, seminars, and conferences. | Analyze the procedure for communicating in debates, meetings, seminars, and conferences. |  | 4.1 Hold debates, meetings, seminars and conferences on given topics and issues.       | Organize debates, meetings, seminars and conferences on given topics and issues      |  |

**PROGRAMME :** National Innovation Diploma In Energy Health Technology  
**COURSE :** Introduction to Computer  
**CODE :** COM 101  
**DURATION :** ONE SEMESTER  
**UNITS :** 6

**GOAL :** This course is designed to enable students to acquire a basic knowledge of computers

**GENERAL OBJECTIVES:** On completion of this course the trainee should:

- 1.0 Understand the history, classification and impact of computers.
- 2.0 Know the concept of computer hardware
- 3.0 Know the concept of computer software.
- 4.0 Understand computer data processing systems.
- 5.0 Know the procedures for computer and data preparation method.
- 6.0 Understand security and safety procedures within a computer environment.
- 7.0 Understand the concept of a computer network
- 8.0 Understand the use of the internet



| <b>PROGRAMME: National Innovation Diploma In Energy Health Technology</b>                         |   |   |  |                                   |  |  |
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| <b>COURSE:</b> Introduction to Computers  |   |   | <b>COURSE CODE:</b> COM 101  |                                   | <b>CONTACT HOURS:</b> 6hrs/week                    |  |
| <b>GOAL:</b> This course is designed to enable students to acquire a basic knowledge of computers |   |   |  |                                   |  |  |
| <b>Course Specification: Theoretical</b>  |   |   |  | <b>Practical Content</b>          |  |  |
| <b>General Objective 1.0:</b> Understand the history, classification and impact of computers.     |   |   |  |                                   |  |  |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>   | <b>Teacher's Activities</b>   | <b>Resource</b>  | <b>Specific Learning Outcomes</b> | <b>Teacher's Activities</b>                        | <b>Resource</b>                                    |
|   | <p>1.1 Define the computer.</p> <p>1.2 Describe the development of computers, in particular abacas, Pascal, Babbage, Hollerith and ENIAC.</p> <p>1.3 Classify computers according to generations from 1st – 5th generation (any subsequent generation).</p> <p>1.4 Distinguish between analogue, digital, and hybrid computers.</p> | <p>Define computer.</p> <p>Trace the history of computer.</p> <p>Classify the computer according to generations.</p> <p>Distinguish between types and classes of computers.</p> | <p>White Board.</p> <p>PC loaded with Power point and connected to OHP</p> | <p>Classify computer systems.</p> | <p>Guide students to classify computer systems</p> | <p>Networked-PCs loaded with software packages</p> |

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|   | <p>1.5 Explain the social implication of computers on society e.g. privacies and quality of life.</p> <p>1.6 List the benefits of computers to the society.</p>  | <p>Highlight the implications of computers to the society.</p> <p>Outline benefits of computer to the society.</p>   | <p>White Board.<br/>PC loaded with Power point and connected to OHP</p> |  |  |   |
| <b>General Objective 2.0: Know the concept of computer hardware</b> |  |  |   |  |  |   |
|   | <p>2.1 Describe computer hardware configuration.</p> <p>2.2 List some input and output units.</p> <p>2.3 Describe functions of the outunit.</p> <p>2.4 Describe the function of C.P.U.</p> <p>2.5 List Auxiliary Units.</p> <p>2.6 Describe the function of the auxiliary memory</p> <p>2.7 Define bits, byte,</p> | <p>Discuss the meaningof hardware.</p> <p>Discuss various components and functions of hardware units.</p> <p>Discuss computer software programming languages.</p> <p>Differentiate between levels of computer software programming</p> | <p>White Board.<br/>PC loaded with Power point and connected to OHP</p> | <p>Identifythe various components of a computer system</p> | <p>Guide the students on how to identify the various components of a computer system</p> | <p>A DEMO PC showing its components</p> |

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| <b>General Objective 3.0: Know the concept of computer software</b>       |   |  |   |   |  |   |
|   | 3.1 Explain software and its various types.<br><br>3.2 Distinguish between the low –level and high – level languages.<br><br>3.3 Explain source and object programmes.<br><br>3.4 Define a translator.<br>3.5 Explain types of translators: assembler, compiler, and interpreter.<br><br>3.6 Explain the use of package programs. | Discuss software and its various types.<br><br>Explain computer packages and its various types | White Board.<br>PC loaded with Power point and connected to OHP | Load computer packages on computer system                               | Demonstrate how to load various computer Packages on computer systems                                      | Networked-PCs loaded with different computer packages |
| <b>General Objective 4.0: Understand computer data processing systems</b> |   |  |   |   |  |   |
|   | 4.1 Explain different processing modes.   | Explain offline and online concepts.<br><br>Define batch processing, real time, time sharing   | White Board.<br>PC loaded with Power point and connected to OHP | Recognize life problems requiring the application of the various modes. | Guide the students on how to identify real life problems requiring the various data processing techniques. | Networked-PCs loaded with different computer          |

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|  |  | and distributed processing. Differentiate between batch processing, real time processing, time-sharing and distributed processing system |  |  |   | packages   |
| <b>General Objective 5.0:</b> Know the procedures for computer and data preparation methods. |  |  |  |  |   |  |
|  | 5.1 Explain how to operate a computer system.                          | Describe the principles and procedures of operating the computer system, the fix up, start up and shut-down systems.                     | White Board.<br>PC loaded with Power point and connected to OHP<br>Diskettes | Carry out the booting and shutting down of computer systems.<br><br>Perform given operations on a computer system. | Demonstrate the booting and shutting down of computer systems<br><br>Guide the students on how to operate the computer systems. | Networked-PCs and storage media such as diskette |
|  | 5.2 Describe initialization of a computer system.                      | Describe initialization of a computer system.  |  | Identify different storage media in computer systems   | Show different storage media to students.   |  |
|  | 5.3 List storage media of a computer system e.g. disc, diskettes, etc. | Describe formatting of storage devices of a computer system such as disks and diskettes.   |  | Format diskettes   | Demonstrate how to format diskettes (if any)  |  |
|  | 5.4 Describe formatting of storage media of a computer system          |  |  |  |   |  |

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|   | e.g. disc and diskettes.   |  |   |   |   |   |
| <b>General Objective 6.0:</b> Understand security and safety procedures within a computer environment |  |  |   |   |   |   |
|   | <p>6.1 Explain data control techniques, operating procedure of a computer installation, safety regulation in computer installation, method of preventing hazards such as fire, flooding and sabotage.</p> <p>6.2 Explain security methods in computer installation and the need for user's password.</p> | <p>Explain data control techniques.</p> <p>Describe standard operating procedures of a computer installation.</p> <p>Explain the need for computer room security.</p> <p>Explain computer system auditing.</p> <p>Explain methods of preventing hazards, fire, flooding sabotage.</p> <p>Describe file security methods in computer installations.</p> <p>Explain the need for file security in Computer</p> | <p>White Board<br/>PC loaded with relevant software packages and connected to OHP</p> | <p>Formulate Passwords that can easily be remembered.</p> | <p>Guide student on how to formulate simple Password that they could easily remember.</p> | <p>Networked PCs and storage media such as diskette</p> |

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|  | 6.3 Explain the user passwords and user name  | installation.<br>Explain the user passwords and user name   |  |   |  |  |
| <b>General Objective 7.0: Understand the concept of a computer network</b> |   |   |  |   |  |  |
|  | 7.1 Define and explain network.<br><br>7.2 Describe different types of network organization such as star, ring and bus.<br><br>7.3 Explain LAN and WAN. | Define computer network.<br><br>Explain different types of network organization such as star, ring, bus etc.<br><br>Describe different types of network: LAN, WAN | White Board<br>PC loaded with power point and connected to OHP                       | 7.1 Identify various computer topologies.<br><br>7.2 Find out different Organizations using the different topologies. | Guide the students on how to identify various network topologies.<br><br>Discuss different Organizations using the different topologies. | Networked-PCs and storage media such as diskette |
| <b>General Objective 8.0: Understand the use of the internet</b>           |   |   |  |   |  |  |
|  | 8.1 Define internet.<br><br>8.2 Describe internet Resources.<br><br>8.3 Explain the processes involved in searching the internet for materials          | Define internet.<br><br>Describe resources of internet.<br><br>Explain processes involved in browsing and searching the internet.<br><br>Explain the meaning      | White Board.<br>PC loaded with power point and internet browser and connected to OHP | 7.3 Carry out search for materials on the internet.   | Guide students to carry out search for materials on the internet   | Networked-PCs connected to the internet.         |

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|  | <p>8.3 Explain the concept of e-mail address.</p> <p>8.4 Outline the processes of acquiring an e-mail address.</p> <p>8.5 Outline the process of sending and receiving an e-mail.</p> | <p>Explain the concept of e-mail address.</p> <p>Describe the processes of acquiring an e-mail address.</p> <p>Describe the process of sending and receiving an e-mail.</p> | <p>White Board.<br/>PC loaded with power point and internet browser and connected to OHP</p> | <p>Compose and send e-mail to given e-mail addresses.</p> | <p>Demonstrate how to compose and send e-mail.</p> | <p>Networked-PCs connected to the internet</p> |

**PROGRAMME :** National Innovation Diploma In Energy Health Technology

**COURSE :** HUMAN ANATOMY I

**CODE :** PTY111

**DURATION :**

**UNITS :**

**GOAL :** To develop an understanding of the anatomical structure of the human body and the ability to identify and palpate major anatomical structures. Emphasis in this course is on the upper and lower limbs

**GENERAL OBJECTIVES:** On completion of this module students should be able to:

- 1.0 Use with understanding the common terminology related to anatomy
- 2.0 Differentiate between different basic body structures through palpation
- 3.0 Describe the anatomical structure of: the lower limb and identify or palpate all major anatomical landmarks
- 4.0 Describe the anatomical structure of: the upper limb and identify or palpate all major anatomical landmarks



| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Technology   |   |  |   |  |  |   |
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| <b>COURSE:</b> HUMAN ANATOMY  |   |  | <b>COURSE CODE:</b> PTY111                                |  | <b>CONTACT HOURS:</b> 7 hours / week   |   |
| <b>GOAL:</b> To develop an understanding of the anatomical structure of the human body and the ability to identify and palpate major anatomical structures. Emphasis in this course is on the upper and lower limbs |   |  |   |  |  |   |
| <b>Course Specification: Theoretical</b>  |   |  |   | <b>Practical Content</b>   |  |   |
| <b>General Objective 1.0:</b> Use with understanding the common terminology related to anatomy.   |   |  |   |  |  |   |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>   | <b>Teacher's Activities</b>  | <b>Resource</b>   | <b>Specific Learning Outcomes</b>  | <b>Teacher's Activities</b>  | <b>Resource</b>   |
|   | 1.1 Define the anatomical terms related to position and movement.<br><br>1.2 Name the major bones and muscles of the whole body | Explain the anatomical terms related to position for the whole of human body.<br><br>Explain the terminology of movement.<br><br>Introduce the names of the major bones and muscles in the body. | Overhead projector<br><br>Data projector<br><br>Skeletons | Apply the terms related to position and movement to a living human being<br><br><br><br>Correctly use the terms that describe the different parts of bone and muscle | Students in groups to practice demonstrating anatomical terms related to position and movement using themselves and a skeleton<br><br>Demonstrate how to recognize different parts of bone, (head neck, shaft etc)<br><br>Use quiz and crossword etc to help students become familiar with anatomical terminology. | Plastic models of human body<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds<br><br>Crosswords and/or a quiz about anatomy |
| <b>General Objective 2.0:</b> Differentiate between different basic body structures through palpation   |   |  |   |  |  |   |

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|  | <p>2.1 Describe the basic body structures and their purposes.</p> <p>2.2 Describe the structure of each body structure listed above.</p> <p>2.3 Differentiate amongst the different body structures listed above</p> <p>2.4 Explain the purpose of surface anatomy.</p> <p>2.5 Outline palpation and surface anatomy techniques.</p> | <p>Introduce basic body structures and systems e.g.</p> <ul style="list-style-type: none"> <li>• Bone</li> <li>• Muscle</li> <li>• Joints</li> <li>• Hair</li> <li>• Skin</li> <li>• Nerves</li> <li>• Blood vessels (Arteries, Veins, Lymph vessels)</li> </ul> <p>Give basic facts on the structure of each body structure above.</p> <p>Explain how each body structure above differs from each other.</p> <p>Explain the purposes of each body structure</p> <p>Introduce palpation and surface anatomy techniques.</p> <p>Explain the term</p> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> <p>Anatomical wall charts</p> | <p>2.1 Demonstrate examples of basic body structures on the living person.</p> <p>2.2 Show basic skills in surface anatomy.</p> <p>2.3 Show basic skills of palpation.</p> <p>2.4 Students to practice palpating different body structures on each other.</p> <p>2.5 Each student to give feedback on what palpations feels like</p> | <p>Show on plastic models and living human beings, examples of different body structures (tendons, ligaments, bone, muscle etc)</p> <p>Demonstrate the techniques and purpose of surface anatomy.</p> <p>Demonstrate the skills of palpation</p> <p>Guide students to practice palpating different body structures on each other</p> <p>Lead each student to give feedback on what palpations feels like</p> | <p>Plastic models of human body</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> |
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|   |                                       | anatomical landmark with examples.   |  |  |   |   |
| <b>General Objective 3.0:</b> Describe the anatomical structure of: the lower limb and identify or palpate all major anatomical landmarks |                                       |  |  |  |   |   |
|   | 3.1 Describe the anatomy of the hip   | <p>Introduce the anatomy of the following:</p> <ul style="list-style-type: none"> <li>• Bones (acetabular region of the hip bone and proximal femur)</li> <li>• Hip joint</li> <li>• Muscles</li> <li>• Nerves</li> <li>• Vessels</li> </ul> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>3.1 Exhibit skills in identifying structures of hip.</p> <p>3.2 Exhibit skills in surface marking of hip and thigh regions.</p> <p>3.3 Demonstrate the actions of the muscles.</p> <p>3.4 Demonstrate all the movements of the hip joint.</p> | <p>Demonstrate skills in identifying structures of hip on a plastic model or a human being.</p> <p>Demonstrate important features of the hip and thigh seen on x-rays</p> <p>Demonstrate surface marking of hip and thigh region for the students to practice on each other.</p> <p>Demonstrate all the movements of the hip joint.</p> | <p>Plastic models of human body</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> <p>x-ray screen</p> <p>x- rays films</p> |
|   | 3.2 Describe the anatomy of the thigh | <p>Introduce the anatomy of the following:</p> <ul style="list-style-type: none"> <li>• femur</li> <li>• Muscles of the</li> </ul>   | <p>Overhead projector</p> <p>Data projector</p>                  | <p>3.5 Exhibit skills in identifying structures of the thigh.</p>  | <p>Demonstrate skills in identifying structures the thigh on a plastic model or a human being</p>   | <p>Plastic models of human body</p>   |

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|  |                                      | thigh <ul style="list-style-type: none"> <li>• Nerves</li> <li>• Vessels</li> </ul>   | Skeletons   | 3.6 Exhibit skills in surface marking of muscles in the thigh.<br><br>3.7 Practice surface marking of the thigh region on one another.<br><br>3.8 Demonstrate the actions of the muscles in the thigh region.                                     | Demonstrate important features of muscles in the thigh seen on x-rays.<br><br>Demonstrate surface marking of the thigh region and allow students to practice on each other.<br><br>Demonstrate the actions of the muscles in the thigh region.  | Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds<br><br>x-ray screen<br><br>x- rays films |
|  | 3.3 Describe the anatomy of the knee | Introduce the anatomy of the following: <ul style="list-style-type: none"> <li>• Distal femur and proximal tibia</li> <li>• Knee joint</li> </ul><br>Revise the following: <ul style="list-style-type: none"> <li>• Muscles</li> <li>• Nerves</li> <li>• Vessels</li> </ul> | Overhead projector<br><br>Data projector<br><br>Skeletons | 3.9 Exhibit skills in identifying structures of the knee region.<br><br>3.10 Demonstrate important features seen on x-rays of the knee region.<br><br>3.11 Demonstrate surface marking of the knee region on one another.<br><br>3.12 Demonstrate | Demonstrate skills in identifying structures of knee on plastic model or a human being<br><br>Demonstrate important features seen on x-rays of the knee region.<br><br>Demonstrate surface marking of the knee region for students practice on each other<br><br>Students to practice how | Plastic models of human body<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds      |

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|  |                                     |   |  | muscles' actions and joint movement of the knee.  | to demonstrate joint movement and muscle actions.  | x-ray screen<br>x- rays films   |
|  | 3.4 Describe the anatomy of the leg | <p>Introduce the anatomy of the following:</p> <ul style="list-style-type: none"> <li>• Tibia and fibula</li> <li>• Tibiofibular joints</li> <li>• Muscles of the leg</li> <li>• Major nerves</li> <li>• Vessels</li> </ul> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>3.13 Exhibit skills in identifying structures of the leg.</p> <p>3.14 Demonstrate important features seen on x-rays of the leg.</p> <p>3.14 Exhibit skills in surface marking the leg region on one another.</p> <p>3.15 Practice the demonstration of actions of the muscles of the leg region.</p> | <p>Demonstrate skills in identifying structures the leg region on a plastic model and a human being.</p> <p>Demonstrate important features seen on x-rays of the leg.</p> <p>Demonstrate surface marking of the leg region and allow students to practice on each other.</p> <p>Students to practice how to demonstrate muscle action of the leg region.</p> | <p>Plastic models of human body</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> <p>x-ray screen</p> <p>x- rays films</p> |
|  | 3.6 Describe the anatomy of ankle   | <p>Introduce the anatomy of the following:</p> <ul style="list-style-type: none"> <li>• Bones of the ankle</li> </ul>   | Overhead projector   | 3.17 Exhibit skills in identifying structures of ankle.   | Demonstrate skills in identifying structures of ankle on a plastic model and a human being   | <p>Plastic models of human body</p> <p>Wall charts of</p>   |

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|  |                                      | <ul style="list-style-type: none"> <li>• Ankle joint</li> <li>• Tendons crossing the ankle joint</li> <li>• Nerves</li> <li>• Vessels</li> </ul>  | <p>Data projector</p> <p>Skeletons</p>                           | <p>3.18 Demonstrate important features seen on x-rays of the ankle.</p> <p>3.17 Exhibit skills in surface marking of the ankle on one another.</p> <p>3.18 Demonstrate the actions of the muscles of the ankle.</p> <p>3.19 Demonstrate all the movements of the ankle joint</p> | <p>Demonstrate important features seen on x-rays of the ankle.</p> <p>Demonstrate surface marking of this region for students to practice on each other.</p> <p>Guide students to practice how to demonstrate joint movement and muscle action of the ankle.</p> | <p>bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> <p>x-ray screen</p> <p>x- rays films</p> |
|  | 3.6 Describe the anatomy of the foot | <p>Introduce the anatomy of the following:</p> <ul style="list-style-type: none"> <li>• Bones of the foot</li> <li>• Joints of the foot</li> <li>• Intrinsic muscles</li> <li>• Major nerves</li> </ul> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>3.20 Demonstrate skills in identifying structures of the foot.</p> <p>3.21 Demonstrate important features seen on x-rays of the foot.</p>   | <p>Demonstrate skills in identifying structures of foot on plastic model and human beings</p> <p>Demonstrate important features seen on x-rays of the foot.</p>  | <p>Plastic models of human body</p> <p>Wall charts of bones and muscles</p>  |

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|  |   | <ul style="list-style-type: none"> <li>Major vessels</li> </ul>   |   | <p>3.22 Exhibit skills in surface marking of the foot on one another.</p> <p>3.23 Demonstrate the actions of the muscles of the foot</p> <p>3.14 Demonstrate all the movements of the joints of the foot.</p>          | <p>Demonstrate surface marking of foot region for students to practice on each other</p> <p>Guide students to practice how to demonstrate joint movement and muscle actions of the foot.</p>  | <p>Skeletons</p> <p>Practical room with beds</p> <p>x-ray screen</p> <p>x- rays films</p> |
| <b>General Objective 4.0</b> Describe the anatomical structure of: the upper limb and identify or palpate all major anatomical landmarks |   |   |   |  |   |   |
|  | <p>4.1 Review the anatomy of the upper and lower limbs.</p> | <p>Review important aspects of anatomy in upper and lower limbs.</p> <p>Emphasize the structures important for an assistant to know.</p> <p>Divide students</p> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> <p>Anatomy books</p> | <p>4.1 Demonstrate the major surface anatomy points for the upper and lower limbs.</p> <p>4.2 Relate theoretical anatomy to practical anatomy.</p> <p>4.3 Carry out surface marking of relevant deep structures on</p> | <p>Divide students into pairs and allow each pair to practice palpation of the regions of the upper and lower limbs.</p> <p>Pairs of students to demonstrate their ability to surface mark deep structures on upper and lower limbs.</p> <p>Observe above' practice</p> | <p>Skeleton</p> <p>Practical room with beds</p> <p>Wall charts of bones and muscles</p>   |

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|  |  | into small groups that will test each other on knowledge of bone, muscle and joints. |  | upper and lower limbs with accuracy<br><br>4.4 Demonstrate joint and muscle action of upper and lower limbs. | and correct them.<br><br>Students to practice how to demonstrate joint movement and muscle action of the upper and lower limbs. |  |
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**PROGRAMME :** National Innovation Diploma In Energy Health Technology

**COURSE :** HUMAN PHYSIOLOGY I

**CODE :** PTY112

**DURATION :** 4 HR/WEEK

**UNITS :**

**GOAL :** To develop theoretical and practical knowledge of human physiology as it is related to physiotherapy

**GENERAL OBJECTIVES:** On completion of this module students should be able to:

1.0 Describe the basic cellular function of body tissues

2.0 Describe the function of the cardio vascular system and relate to physiotherapy

3.0 Describe the function of the respiratory system and relate to physiotherapy

4.0 Explain the physiology of muscle and exercise and relate it to physiotherapy



| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Science  |   |  |   |  |   |   |
|---|---|--|---|--|---|---|
| <b>COURSE:</b> HUMAN Physiology   |   |  | <b>COURSE CODE:</b> PTY112                      |  | <b>CONTACT HOURS:</b> 4 hours / week  |   |
| <b>GOAL:</b> To develop theoretical and practical knowledge of human physiology as it is related to physiotherapy |   |  |   |  |   |   |
| <b>Course Specification: Theoretical</b>  |   |  |   | <b>Practical Content</b>   |   |   |
| <b>General Objective 1.0:</b> Describe the basic cellular structure and function of body tissues.                 |   |  |   |  |   |   |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>             | <b>Teacher's Activities</b>  | <b>Resource</b>                                 | <b>Specific Learning Outcomes</b>  | <b>Teacher's Activities</b>   | <b>Resource</b>   |
|   | 1.1 Describe the function of the body tissues | <p>Introduce cellular function of:</p> <ul style="list-style-type: none"> <li>- Epithelium</li> <li>Glands</li> <li>- Connective tissue</li> </ul> <p>Give examples of body tissues listed above.</p> <p>Relate the knowledge of cellular function</p> | <p>Overhead projector</p> <p>Data projector</p> | <p>1.1 Describe the role of the tissues in human function.</p> <p>1.2 Relate body tissues to human function.</p> <p>1.3 Identify structures on models and wall</p> | <p>Conduct small group tutorials to discuss further details of the tissues in human function.</p> <p>Relate the tissues to human function.</p> <p>Students to identify structures on models and</p> | <p>Anatomical and physiological models</p> <p>Physiology text books</p> |

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|  |   | of Epithelium glands and Connective tissues to physiotherapy.   |  | charts.   | wall charts<br>Quiz students about structures and functions of body tissues.  |  |
| <b>General Objective 2.0:</b> Describe the functions of the cardio vascular system and relate to physiotherapy |   |   |  |   |   |  |
|  | 2.1 Describe the function of the human heart.       | Describe the structure of the human heart. ,<br>Explain the following<br>- endocardium,<br>- myocardium,<br>- pericardium<br><br>- Valves of heart<br>- Conduction system | Overhead projector –<br><br>Data projector<br><br>Overhead projector | 2.1 Describe functions of the human heart.  | Organize tutorials to elucidate the importance of the structure of a human heart and relate it to the functions of the human heart. | Plastic model of the heart<br><br>Skeleton<br><br>Stethoscopes       |
|  | 2.2 Describe the function of the circulatory system | Explain Coronary circulation<br><br>Explain the   | Data Projector   | 2.2 Recognise normal heart sounds using stethoscope.<br><br>2.3 Describe functions of the | Demonstrate the use of stethoscope to listen to heart sounds.<br><br>Organize tutorials to elucidate the                            | Plastic model of the heart<br><br>Diagrams of the circulatory system |

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|  |   | structure of the arteries, arterioles, veins, capillaries          |                                     | vessels.<br><br>2.4 Observe the demonstration the pathways of major arteries and veins.<br><br>2.5 Students to trace path of arteries and veins on each other. | importance of structure of the vessels and relate the structure to the functions.<br><br>Demonstrate the pathways of major arteries and veins.<br><br>Guide students to trace path of arteries and veins on each other. | Skeleton<br><br>Stethoscopes |
|  | 2..3 Describe the functions of the heart. | Explain the cardiac cycle, electrical activity of the heart & ECG. | Overhead projector – Data projector | 2.6 Explain the importance of understanding heart function for physiotherapy.<br><br>2.7 Recognize a   | Organize tutorials to elucidate the importance of these structures and to relate their structure to function<br><br>Demonstrate   | Normal ECG traces            |

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|  |  |   |  | normal ECG trace   | normal ECG traces<br>Conduct Quiz on structure and function of the heart   |                       |
|  | 2.4 Explain the mechanisms and control of blood flow and blood pressure              | Explain the following:<br>- Blood flow,<br>- Blood pressure               | Overhead projector<br><br>Data projector | 2.8 Elaborate the importance of understanding vascular function for physiotherapy<br><br>2.9 Take the major pulses on a human being. | Organize tutorials to discuss the importance of vascular function for physiotherapy.<br><br>Teach how to take all the major pulses<br><br>Conduct Quiz on structure and functions of the vascular system | Sphygmomanometers     |
|  | 2.5 Describe the structure of blood and its functions<br><br>2.6 Explain haemostatic | Explain Blood and its functions in human body.<br><br>Explain Haemostatic | Overhead projector<br><br>Data projector | 2.10 Elaborate on function of blood on a human body.   | Organize tutorials to discuss the importance of blood and relate the structure to the functions.   | Physiology text books |

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|  | 2.7 Describe the formation of lymph and its functions.   | Explain Lymph formation.<br><br>Explain lymph functions.                     | Overhead projector<br><br>Data projector. | 2.11 Identify the functions of lymph.   | Organize tutorials to discuss the importance of lymph and relate the structure to the functions.  | Physiology text books   |
| <b>General Objective. 3.0:</b> Describe the structure and function of the respiratory system and relate to physiotherapy |  |  |   |   |   |   |
|  | 3.1 Describe the general arrangement and structure of the component parts of the respiratory system. | Explain the arrangement of upper respiratory tract.                          | Overhead projector<br><br>Data projector  | 3.1 Discuss why the knowledge of the structure of the upper respiratory tract is important to physiotherapy.<br><br>3.2 Draw diagrams of the arrangement of the thoracic contents | Organize tutorials to discuss the importance of upper respiratory tract and relate the structure to the functions<br><br>Ask Students to draw diagrams of the arrangement of the thoracic contents. | Plastic models of the lungs<br><br>Pictures of the lungs<br><br>Physiology text books |
|  | 3.2 Describe the arrangement and structure of the component parts of the lower respiratory           | Explain the arrangement of the Lungs including:<br>- Bronchi,<br>bronchioles | Overhead projector<br><br>Data            | 3.3 Discuss why a knowledge of the structure of the lower respiratory system is   | Organize tutorials to discuss the importance of lower respiratory system and to relate the structure to the   | Plastic models of the lungs<br><br>Pictures of  |

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|  | system.  | - alveoli<br>- pleura<br><br>Explain Pulmonary circulation in human being.  | projector                                | important to physiotherapy  | functions.<br><br>Show arrangement of lungs including, Bronchi, bronchioles, alveoli and pleura.                         | the lungs<br><br>Physiology text books                    |
|  | 3.3 Describe lung function, including the mechanics of respiration | Explain the mechanics of breathing<br><br>Explain the process of Gas Exchange in the lungs.<br><br>Explain diffusion of oxygen and carbon dioxide during respiration in human beings. | Overhead projector<br><br>Data projector | 3.4 Relate the function of the lung to human movement and physiotherapy | Organize tutorials to discuss the importance of lung during in respiration and to relate the structure to the functions. | Plastic models of the lungs.<br><br>Physiology text books |
|  | 3.4 Describe the transport of gasses in the human body.            | Explain Oxygen and carbon dioxide transport in  | Overhead projector                       | 3.5 Discuss the importance of good gas transport in                     | Organize tutorials to discuss the importance of good transport of oxygen   | Plastic models of the lungs.                              |

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|   | 3.5 Describe the Regulation of respiration in the human body.                              | respiration<br>Explain regulation of respiration in the human body.   | Data projector                         | respiration in the human body to exercise and function                 | and carbondioxide during respiration.<br>Identify functions of oxygen and carbondioxide gases during respiration.   | Physiology text books |
| <b>General Objective. 4.0:</b> Explain the physiology of muscle and exercise and relate it to physiotherapy |  |   |  |  |   |                       |
|   | 4.1 Describe the structure of muscle.<br><br>4.2 Explain the process of muscle metabolism. | Give a description of a typical structure of muscle.<br><br>Explain muscle fibre types (Type I, II, etc)<br><br>Explain Muscle metabolism | Overhead projector –<br>Data projector | 4.1 Relate the physiology of muscle fibre type to therapeutic exercise | Tutorials to explain the importance of these structures and to relate their structure to function and physiotherapy | Physiology text books |

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|  | 4.3 Describe the process of muscle contraction.                                | Explain Neuromuscular junction<br><br>Explain Muscle contraction. | Overhead projector –<br>Data projector   | 4.2 Identify the relationship between the physiology of muscle contraction and therapeutic exercise. | Discuss muscle contraction and relate it to therapeutic exercise and physiotherapy. | Physiology text books  |
|  | 4.4 Explain reflexes and their role in controlling movement of muscles in man. | Explain Reflexes, muscle spindles, golgi tendon organ             | Overhead projector<br><br>Data projector | 4.3 Explain the reflexes in therapeutic practice.  | Organize tutorials to discuss the influence of reflexes on human movement.          | Physiology text books. |

**PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE**

**COURSE TITLE: MAN AND HIS ENVIRONMENT**

**COURSE CODE: EHS 105**

**CONTACT HOURS: 1.0**

**GOAL:** This course is designed to expose student to the origin of man and his essential universality and influence on physical and social environment.

**GENERAL OBJECTIVE:** On the completion of the course the students should be able to:

- 1.0** Understand physical creatures
- 2.0** Understand settlement patterns



### 3.0 Know natural resources.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  |   |  |                             |   |                             |                  |
|---|---|--|-----------------------------|---|-----------------------------|------------------|
| <b>Module:</b> MAN AND HIS ENVIRONMENT  |   |  | <b>Course Code:</b> EHS 105 | <b>Contact Hours :</b> Theory – 1Hour<br>Practical -1Hour/ per week |                             |                  |
| <b>Year 1</b>   | <b>Semester 2</b>                                 |  | <b>Pre-Requisite:</b> Nil   | <b>Credit Unit:</b> 2.0   |                             |                  |
| Goal: This course is designed to expose student to the origin of man and his essential universality and influence on physical and social environment. |   |  |                             |   |                             |                  |
| <b>Theoretical Content</b>  |   |  |                             | <b>Practical Content</b>  |                             |                  |
| <b>General Objectives 1.0:</b> Understand physical creatures  |   |  |                             |   |                             |                  |
| <b>Wk</b>   | <b>Specific Learning outcomes</b>                 | <b>Teacher’s activities</b>                              | <b>Resources</b>            | <b>Specific Learning outcomes</b>                                   | <b>Teacher’s activities</b> | <b>Resources</b> |
|   | 1.1 Explain physical creatures.                   | Define physical creatures                                | Text books                  |   |                             |                  |
|   | 1.2 State the features of physical creatures      | Enumerate the features of physical creatures .           | Journals                    |   |                             |                  |
|   | 1.3 Explain the influence of physical features on | Discuss the influence of physical features on pattern of | Internet<br>Resources       |   |                             |                  |

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|   | <p>pattern of life.</p> <p>1.4 Explain the following:</p> <ul style="list-style-type: none"> <li>• Local Economy</li> <li>• Politics</li> <li>• Religion</li> <li>• Communication</li> </ul>  | <p>life</p> <p>Discuss the following features of physical creatures:</p> <ul style="list-style-type: none"> <li>- local economy</li> <li>- Politics</li> <li>- Religion</li> <li>- Communication</li> </ul> |  |  |  |  |
| <b>GENERAL OBJECTIVES 2.0:</b> Understand settlement patterns |   |   |  |  |  |  |
|   | <p>2.1 Explain settlement pattern</p> <p>2.2 Differentiate rural and urban types of settlement pattern.</p> <p>2.3 Explain the following:</p> <ul style="list-style-type: none"> <li>• Type of houses</li> <li>• Local arrangement</li> </ul> | <p>Describe settlement pattern</p> <p>State the difference between urban and rural settlement pattern</p> <p>Discuss the type of houses.</p> <p>Discuss local arrangement.</p>                              |  |  |  |  |
| <b>GENERAL OBJECTIVES 3.0:</b> Know natural resources.        |   |   |  |  |  |  |
|   | <p>3.1 Explain natural resources.</p> <p>3.2 Explain the relationship between natural resources and physical environment.</p> <p>3.3 Explain the influence of natural resources on man in relation to economy.</p>                            | <p>Define natural resources.</p> <p>State the relationship between natural resources and physical environment.</p> <p>Describe the influence of natural resources on man.</p>                               | <p>Use of maps showing the location of natural resources</p> |  |  |  |

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|  | 3.4 Explain the utilization of natural resources. | Enumerate the utilization of natural resources. |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION (NID) IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** GENETICS

**COURSE CODE:** EHS 107

**CREDIT UNIT:** 2.0

**CONTACT HOURS:** Theory -2; Practical - Nil

**GOAL:** This course is designed to enable students to comprehend basic principles of Genetics as the foundation for healthy living.

### **General Objectives**

- 1.0 Understand basic concepts in Genetics
- 2.0 Understand rudiments of Mendelian Genetics
- 3.0 Understand the concept of dominance and deviations from Mendelian Genetics
- 4.0 Understand sex determination and sex linkage
- 5.0 Understand the mechanism of variation and mutation
- 6.0 Understand the basic concept in genetic engineering

| PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |  |  |           |  |   |   |
|---|--|--|-----------|--|---|---|
| COURSE: Genetics  |  | Course Code: EHS 107   |           | Credit Hours: 2.0  | Contact Hour: 2   |   |
| Year: 1 Semester: 1   |  | Pre-requisite: Nil   |           |  |   |   |
| Goal: This course is designed to enable students to comprehend basic principles of Genetics as the foundation healthy living. |  |  |           |  |   |   |
| Theoretical Content   |  |  |           | Practical Content  |   |   |
| General Objective 1.0: Understand Basic Concepts in Genetics  |  |  |           |  |   |   |
| Wk  | Specific Learning Outcomes   | Teacher's activities   | Resources | Specific Learning Outcomes   | Teacher's activities  | Resources                                       |
| 1-2   | <u>Basic Concepts In Genetics</u><br>1.1 Define genetics.<br><br>1.2 Define genes and gene mutation.<br><br>1.3 Explain the importance of chromosomes and genes in heredity. | Explain Genetic.<br><br>Explain genes, gene Mutation.<br>Explain Sickle cell Anemia as been caused by gene mutation.<br><br>Explain Chromosomes as a basics of inheritance | Classroom | 1.1 Identify different symbols used in genetics.<br><br>1.2 Identify various forms of gene mutation.<br><br>1.3 Identify Chromosomes from the nucleus of a cell. | Assist students to use the symbols in genetic crossing.<br><br>Prepare slide of mitosis e.g. to identify various forms of gene mutation.<br><br>Guide students to identify chromosome from the nucleus of a cell in a prepared slide. | Genetic chart, projector                        |
| General Objective 2.0: Understand Rudiments of Mendelian Genetics   |  |  |           |  |   |   |
| 3-4   | <u>MENDELIAN LAWS</u><br>2.1 State the two Mendelian laws of inheritance.  | Explain the two laws of inheritance (Mendelian laws) as law of segregation and   | Classroom | 2.1 Identify the different laws of genetics.   | Guide students to identify the different laws of genetics.  | Chart of double factor inheritance using punnet |

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| 5 | <p>2.2 Explain the first and the second laws of Mendel, in relation to meiosis.</p> <p>2.3 Explain Mendel's experiments and point out the conclusions for the experiments.</p> <p>2.4 Explain the following terms, monohybrid, dihybrid, alleles, linkage, recessive gene, dominant gene, phenotype, genotype.</p> <p>2.5 List examples of monohybrid inheritance in fruit fly (<b>Drosophila melanogaster</b>) albinism cysticfibrosis, and chondrodystrophic dwarfism in men.</p> <p>2.6 Describe dihybrid inheritance by means of plant height/flower colour; seed coat/ position of flower,</p> | <p>independent assortment.<br/>Explain Mendel's experiments using pea plant.</p> <p>Describe monohybrid crossing of single factor inheritance and dihybrid crossing of double inheritance</p> <p>Explain monohybrid inheritance in fruit fly.</p> <p>Describe dihybrid and deviation from Mendelian's ratio.</p> |  | <p>2.2 Identify with examples single factor inheritance and double factor inheritance.</p> <p>2.3 Identify chromosomes in prepared slide of mitosis.</p> <p>2.4 Identify chromosome in a prepared slide.</p> | <p>Guide students to distinguish between single factor and double factor inheritance using a Punnet Square.</p> <p>Prepare slide of mitosis.</p> <p>Guide students to identify chromosome in the prepared slide</p> | <p>square</p> <p>Prepare slides microscope &amp; cover slips</p> |
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|   | or any other combination of character of pea plant (Pisum Sativum).  |   |  |  |   |                                |
|   | 2.7 Explain the deviations from Mendelian ratio  |   |  |  |   |                                |
| <b>General Objective 3.0:</b> Understand the extension & amendment of Mendelian's laws. |  |   |  |  |   |                                |
| 6   | 3.1 Describe complete dominance of genes.<br><br>3.2 Describe incomplete dominance of genes.<br><br>3.3 Explain multiple alleles using ABO Blood group and Rhesus Factor (Rh).   | Explain complete dominant gene using ABO human blood group.<br><br>Explain incomplete dominant gene using 4 o'clock plant.<br><br>Explain multiple Allele using human ABO blood group and Rhesus Factor (Rh). | Blackboard<br>Chalk<br>Overhead<br>Projector | 3.1 Use chart/ diagram to identify complete dominant gene.<br><br>3.2 Use chart/ diagram to identify incomplete dominant gene with 4 o'clock plant.<br><br>3.3 Identify with chart IA <sup>o</sup> , IB <sup>o</sup> , IAB and Rhesus Factor (Rh). | .Assist students to indicate with crosses showing various outcome of activities 3.1 to 3.3.   | Chart of human ABO blood group |
| <b>General Objective 4.0:</b> Understand Sex determination and Sex linkage.             |  |   |  |  |   |                                |
| 7-8   | 4.1 Explain the mechanism of sex determination.<br><br>4.2 Describe sex linked inheritance as in eye colour in Drosophila; colour blindness and haemophilia in man.<br><br>4.3 Explain the relevance of genetics in disputed | Explain two main sexes in human as xx and xy chromosomes.<br><br>Explain sex linked inheritance as in eye colour.<br><br>Describe relevance of genetics in settling   | Blackboard<br>Chalk<br>Overhead<br>Projector | 4.1 Use chart to identify the outcome of possibilities of obtaining ratio boys and girls from a cross between xx and xy chromosomes.<br><br>4.2 Identify sex linked characters.  | Assist students to indicate male and female from cross between xx and xy chromosomes.<br><br>Assist student to identify sex linked characters such as | Chart of sex determination     |

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|  | Paternity.   | paternity disputes.   |   | 4.3 Identify various areas where genetics is applied such as:<br>- Crime detection<br>- Blood transfusion<br>- Settling paternity dispute  | colour blindness, haemophilia etc.<br>Assist student to use genetic diagram to prove or disprove a paternity case.<br><br>Show various areas where genetics is applied such as:<br>- Crime detection<br>- Bloodtransfusion<br>- Settling paternity dispute |  |
| <b>General Objective 5.0:</b> Understand the mechanism of variation and Mutation |  |   |   |  |  |  |
| 9-10   | 5.1 Define variation.<br><br>5.2 Differentiate between continuous and discontinuous variations.<br><br>5.3 Explain the role of meiosis in causing variation.<br><br>5.4 Define mutation.<br><br>5.5 State the causes of mutation.<br><br>5.6 List various kinds of mutation. | Explain variation and its types.<br><br>Explain continuous and Discontinuous variation.<br><br>Explain the role of meiosis in causing variation.<br><br>Explain mutation.<br><br>Explain various causes of mutation.<br><br>Describe the kinds of mutation. | Blackboard<br>Chalk<br>Overhead<br>Projectors | 5.1 Identify variation and its types.<br><br>5.2 Identify with examples continuous & discontinuous variation.<br><br>5.3 Identify the role of meiosis in causing variation.<br><br>5.4 Identify mutation and | Assist students to identify variation and its types.<br><br>Show examples of continuous and discontinuous variation<br><br>Assist student to identify the role of meiosis in causing variation .<br><br>Assist students to identify mutation and its types | <ul style="list-style-type: none"> <li>• Genetic chart</li> <li>• Projector</li> </ul> |



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|  | 5.7 Explain the role of mutation in variation.   | Explain role of mutation in variation.   |   | its causes.  | Assist students to identify sex syndromes, Klinefelters, Terners, mongolism & xxy combination. |   |
|  | 5.8 Explain the following:-<br>Mongolism/Down's syndrome; Klinefelter's syndrome; Turner's syndrome and XXY combinations | Explain Klinefelters Syndrome, Terners Syndrome<br>Mongolism/Down's syndrome & xxy combination |   | 5.5 Identify sex syndrome, Klinefelters, Terners, mongolism & xxy combination. |  |   |
| <b>General Objective 6.0:</b> Understand the basic concept in genetics Engineering |  |  |   |  |  |   |
| 11-12  | <b>Genetics Engineering</b><br>6.1 Define Biotechnology  | Explain various forms of Biotechnology.  | Blackboard<br>Chalk<br>Overhead<br>Projectors | 6.1 Identify various aspects of Biotechnology.                                 | Show various forms and aspects of Biotechnology.   | <ul style="list-style-type: none"> <li>• Projector,</li> <li>• Internet</li> <br/> <li>• E.coli and PAMP,</li> <li>sterile pipettes,</li> <li>Peptric dishes agar,</li> <li>Ampicillin,</li> <li>test-tube etc</li> </ul> |
|  | 6.2 Explain Nucleic acid and Non-nucleic acid Biotechnology.   | Describe Nucleic acid and Non-nucleic acid Biotechnology.                                      |   | 6.2 Identify various techniques in gene mutation.                              | Guide students to identify various techniques in gene mutation.                                |   |
|  | 6.3 Explain Genetic manipulation techniques in the areas of cloning.   | Describe genetic manipulation technique in the areas of cloning                                |   | 6.3 Carry out gene pool and Biochemistry of Nucleic Acid                       | Supervise students in gene pool & Biochemistry of Nucleic Acid                                 |   |
|  | 6.4 List the importance of biotechnology in Human development.   | Describe importance of Biotechnology in Human development                                      |   | 6.4 Identify various importance of Biotechnology in Human development.         | Assist students to know the importance of Biotechnology in Human development.                  |   |

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** INTRODUCTION TO ENERGY HEALTH SCIENCE

**COURSE CODE:** EHS 109

**CREDIT UNIT:** 2 .0

**CONTACT HOUR:** 2HOURS/WEEK

**GOAL:** This course is designed to enable the student acquire knowledge to comprehend philosophy of energy flow in human body.

**GENERAL OBJECTIVES:** On completion of this course the students should be able to:-

1. Understand the full definition of Energy health Science
2. Know the history and philosophy of energy Health science.
3. Understand the concept of vital force, universal energy and cosmic energy.
4. Understand the disciplines of energy health science.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>  |  |  |   |                                   |                             |                  |
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| <b>COURSE:</b> Introduction to Energy Health Science  |  | <b>Code:</b> EHS 109   | <b>Credit Unit:</b> 2.0                               | <b>Contact Hour:</b> 2 – 0 - 0    |                             |                  |
| <b>GOAL:</b> This course is designed to enable the student acquire knowledge to comprehend philosophy of energy flow in human body. |  |  |   |                                   |                             |                  |
| <b>Theoretical Content</b>  |  |  | <b>Practical Content</b>                              |                                   |                             |                  |
| <b>General Objectives 1.0:</b> Understand the full definition of energy health science  |  |  |   |                                   |                             |                  |
| <b>Wee k</b>  | <b>Specific Learning outcomes</b>  | <b>Teacher’s activities</b>  | <b>Resources</b>                                      | <b>Specific Learning outcomes</b> | <b>Teacher’s activities</b> | <b>Resources</b> |
|   | 1.1 Define Energy health science.<br><br>1.2 Define CHI or KI<br><br>1.3 Define MERIDIANS.<br><br>1.4 Explain how to restore the sick to health through energy | Explain energy health.<br><br>Explain the meaning of CHI or KI.<br><br>Explain meridian<br><br>Describe the process of restoring sickness through energy | Pictures<br><br>Textbook<br><br>Marker Board<br>Chart |                                   |                             |                  |
| <b>General Objectives 2.0:</b> Know the history and philosophy of energy health science   |  |  |   |                                   |                             |                  |
|   | 2.1 State the history of energy health.<br><br>2.2 State the origin of energy health.  | Narrate the history of energy health science.<br><br>Narrate the ancient origin of energy health science.  | Pictures<br><br>Textbook<br><br>Marker Board          |                                   |                             |                  |

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|   | 2.3 State the philosophy of energy health science             | Explain the philosophy of energy health science          | Chart                                 |  |  |  |
| <b>General Objectives 3.0:</b> Understand the definition of vital force, universal energy and cosmic energy |   |  |                                       |  |  |  |
|   | 3.1 Define vital force.                                       | Explain vital force in details                           | Pictures                              |  |  |  |
|   | 3.2 Define universal energy.                                  | Explain in details universal energy.                     | Textbook                              |  |  |  |
|   | 3.3 Define cosmic energy.                                     | Discuss cosmic energy.                                   | Marker Board<br>Chart                 |  |  |  |
| <b>General Objectives 4.0:</b> Understand the disciplines of energy health                                  |   |  |                                       |  |  |  |
|   | 4.1 Mention the disciplines of energy health science.         | Outline the disciplines of energy health science         | Pictures                              |  |  |  |
|   | 4.2 Explain each of the disciplines of energy health science. | Discuss each of the discipline of energy health science. | Textbook<br><br>Marker Board<br>Chart |  |  |  |

# **NID 1 – SECOND SEMESTER**

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** BIOCHEMISTRY/BIOCHEMICAL SCIENCE I

**COURSE CODE:** EHS 102

**CREDIT HOURS:** 4.0

**COURSE DURATION:** THEORY – 2HOURS/WEEK; PRACTICAL – 2 HOURS/WEEK

**GOAL:** This course is designed to enable students comprehend the basic and general biochemical principles foundation for healthful living.

**General Objectives:** On completion of this course, the students should be able to:

- 1.0. Understand the molecular organization of the living cells and its top chemistry
- 2.0. Understand the importance of water and the concepts of pH and buffers
- 3.0. Understand the properties, sources, uses and structure of carbohydrates.
- 4.0. Understand carbohydrate metabolism and regulation of glucose metabolism.
- 5.0. Understand in-born errors of carbohydrate metabolism.
- 6.0. Understand the properties, structures and reactions of monosaccharide
- 7.0. Understand the structures and uses of disaccharides and polysaccharides.
- 8.0. Understand nature, biological and industrial importance of lipids.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |   |   |                      |  |   |  |
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| <b>Course:</b> Biochemistry/Biochemistry Science I   |   |   | <b>Code:</b> EHS 102 | <b>Credit Unit:</b> 4.0  | <b>Contact Hours:</b> 2 – 0-2   |  |
| <b>Goal: This course is designed to enable students comprehend the basic and general biochemical principles foundation for healthful living.</b> |   |   |                      |  |   |  |
| <b>Theoretical Content</b>   |   |   |                      | <b>Practical Content</b>   |   |  |
| <b>General Objective 1.0:</b> Understand the molecular organization of the living cell and its top chemistry                                     |   |   |                      |  |   |  |
| <b>Week</b>  | <b>Specific Learning Outcomes</b>   | <b>Teacher's activities</b>   | <b>Resources</b>     | <b>Specific Learning Outcomes</b>  | <b>Teacher's activities</b>   | <b>Resources</b>   |
| 1-2  | <p>1.1 List cell organelles.</p> <p>1.2 Explain centrifugation using human blood to separate serum or plasma from blood.</p> <p>1.3 Explain the structure, functions and fractions of intracellular organelles.</p> <p>1.4 Describe chemical composition of nutrients (i.e. carbohydrate, protein, lipids, DNA,</p> | <ul style="list-style-type: none"> <li>• Explain various cell organelles.</li> <li>• Explain centrifugation using human blood to separate serum or plasma from blood.</li> <li>• Describe functions and fractions of intracellular organelles.</li> <li>• Explain chemical composition nutrients (i.e. carbohydrate, protein, lipids, DNA, RNA, nucleoproteins</li> </ul> | Classroom            | <p>1.1 Identify centrifugation of fractions of human blood.</p> <p>1.2 Identify functions and fractions of intracellular organelles.</p> | <ul style="list-style-type: none"> <li>• Demonstrate Cell fractionation of a human blood.</li> <li>• Identify functions and fractions of intracellular organelles.</li> </ul> | <ul style="list-style-type: none"> <li>- Centrifuge</li> <li>- Experimental animal</li> <li>- Dissecting set</li> <li>- Homogeniser</li> <li>- Glasswares</li> </ul> |

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|   | RNA, nucleoproteins etc.)  | etc.)   |   |  |   |  |
| <b>General Objective 2.0:</b> Understand the importance of water and the concepts of pH and buffers.  |  |   |   |  |   |  |
| 3   | <p>2.1 Explain the importance of water as a major cellular component.</p> <p>2.2 List the properties of water which makes it suitable as the liquid of living systems.</p> <p>2.3 List the common laboratory and physiological buffer systems with their components.</p> <p>2.4 Explain how the buffers above function to resist pH changes e.g. in physiological systems.</p> | <ul style="list-style-type: none"> <li>• Explain the importance of water as a major cellular component</li> <li>• Explain the properties of water to living systems.</li> <li>• Explain the laboratory and physiological buffer systems and components</li> <li>• Explain chemistry of buffer in pH changes particularly in physiological systems.</li> </ul> | - | <p>2.1 Identify appropriate acid and its salts (or base and its salt) for a buffer system at a given pH from a list of weak acids/bases.</p> <p>2.2 Measure the pH of systems using Lovibond comparator or pH meter.</p> | <ul style="list-style-type: none"> <li>• Demonstrate the use of a pH meter.</li> <li>• Conduct practicals on the measurement of pH of solutions.</li> </ul> | <ul style="list-style-type: none"> <li>- Lovibond Comparator</li> <li>- Indicator Papers</li> <li>- pH metre</li> <li>- Indicator Solutions.</li> <li>- Glasswares/ Tiles</li> </ul> |
| <b>General Objective 3.0:</b> Understand the properties, sources, uses and structure of carbohydrates |  |   |   |  |   |  |
| 4-5   | <p><b>Carbohydrates</b></p> <p>3.1 Explain carbohydrates as polyhydroxy-ketones of</p>   | <ul style="list-style-type: none"> <li>• Describe carbohydrates as ketones and aldehyde moiety e.g</li> </ul>   |   | <p>3.1 Carry out test for carbohydrates in the laboratory e.g. by Meish test, or Fehlings test,</p>  | <ul style="list-style-type: none"> <li>• Conduct test for carbohydrates in the laboratory e.g. by Meish test or</li> </ul>                                  | <ul style="list-style-type: none"> <li>- Glasswares</li> <li>- Reagents such as Molish, Fehlings</li> </ul>  |



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|   | <p>polyhydroxyaldehydes and their derivatives.</p> <p>3.2 List the general properties of carbohydrates.</p> <p>3.3 Explain the general properties of carbohydrates.</p> <p>3.4 List common sources of carbohydrates.</p> <p>3.5 List domestic and industrial uses of Carbohydrates.</p> <p>3.6 Classify carbohydrates as mono-di-oligo and polysaccharides .</p> <p>3.7 Draw structural formula of named examples of each class of carbohydrate in 3.6 above.</p> | <p>polyhydroxyketone of polyhydroxyaldehydes.</p> <ul style="list-style-type: none"> <li>Describe general properties of carbohydrates.</li> <li>Explain the general properties of carbohydrates.</li> <li>Explain common sources of carbohydrates.</li> <li>Explain domestic and industrial uses of carbohydrates.</li> <li>Describe carbohydrate as mono-di-oligo and polysaccharides classes.</li> <li>Describe various structures of each class of carbohydrate listed in 3.6.</li> </ul> |  | etc.                       | fehling's test, etc.   | etc.     |
| <b>General Objective 4.0:</b> Understand Carbohydrate metabolism and regulation of glucose metabolism |   |  |  |                            |  |          |
|   | 4.1 List some essential   | <ul style="list-style-type: none"> <li>Explain the major</li> </ul>  |  | 4.1 Use charts to identify | <ul style="list-style-type: none"> <li>Guide student to</li> </ul> | - Charts |

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|  | <p>Amino acid in human .</p> <p>4.2 List non-essential Amino acid.</p> <p>4.3 Describe degradation of essential Amino acid.</p> <p>4.4 Explain salvage pathway that allows formation</p> | <p>group of some essential Amino acid, namely;</p> <ul style="list-style-type: none"> <li>- Histidine</li> <li>- Valine</li> <li>- Isoleucine</li> <li>- Luecine</li> <li>- Lysine</li> <li>- Methionine</li> <li>- Phenylalanine</li> <li>- etc</li> </ul> <ul style="list-style-type: none"> <li>• Explain the major examples of non-essential Amino acid, namely; <ul style="list-style-type: none"> <li>- Alanine</li> <li>- Arginine</li> <li>- Asparagine</li> <li>- Cystenine</li> <li>- Glutamine</li> <li>- Glutamate</li> <li>- Proline</li> <li>- etc</li> </ul> </li> <li>• Describe catabolic breakdown in dietary Protein, Storage and Metabolic turnover.</li> <li>• Identify formation of Arginine from Proline, Cystenine from</li> </ul> |  | <p>major essential Amino acids e.g.</p> <ul style="list-style-type: none"> <li>- Histidine</li> <li>- Valine</li> <li>- Isoleucine</li> <li>- Luecine</li> <li>- Lysine</li> <li>- Methionine</li> <li>- Phenylalanine</li> <li>- etc</li> </ul> <p>4.2 Identify groups of various non-essential Amino acid.e.g.</p> <ul style="list-style-type: none"> <li>- Alanine</li> <li>- Arginine</li> <li>- Asparagine</li> <li>- Cystenine</li> <li>- Glutamine</li> <li>- Glutamate</li> <li>- Proline</li> <li>- etc</li> </ul> <p>4.3 Identify structures and equation of catabolic breakdown of essential Amino acid.</p> <p>4.4 Use chart to describe Salvage pathway in the formation of some major Amino acid.</p> | <p>identify major essential Amino acid in a suitable chart.</p> <ul style="list-style-type: none"> <li>• Assist student to identify the structures of some non-essential Amino acids in a given chart.</li> <li>• Use equations to illustrate the breakdown of essential Amino acids.</li> <li>• Use chart to describe Salvage pathway in the formation of some major Amino</li> </ul> | <ul style="list-style-type: none"> <li>- Charts</li> <li>- Charts</li> <li>- Charts</li> </ul> |
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|   | of certain non-essential Amino acid.  | Methionine, etc.  |  |   | acid.   |  |
| <b>General Objective 5.0:</b> Understand in-born error of carbohydrates metabolism                  |   |   |  |   |   |  |
| 6   | <p>5.1 Define the terminology DNA.</p> <p>5.2 Explain Genetic significant of nucleic acid.</p> <p>5.3 Describe the structure of DNA.</p> <p>5.4 Explain Duplex structure of DNA.</p> <p>5.5 Identify DNA Denaturation.</p> <p>5.6 Describe the structure of chromosome.</p> | <ul style="list-style-type: none"> <li>• Explain the meaning of DNA.</li> <li>• Explain the importance of Nucleic acid to DNA.</li> <li>• Explain the chemical components that constitute DNA (i.e. nitrogenous bases).</li> <li>• Describe the untwisted straight ladder, spiral ladder in the structure of DNA.</li> <li>• Explain the DNA Denaturation</li> <li>• Describe chromosome as a thread-like material located in the nucleus of a cell.</li> </ul> |  | <p>5.1 Identify gene, as being carried around the body by chromosomes.</p> <p>5.2 Identify using structures, the nucleotide and nucleoside Purine and Pyrimidine base.</p> <p>5.3 Use chart to identify the base pairing in the structure of DNA.</p> <p>5.4 Identify chromosome in the nucleus of Eukaryotic cell.</p> | <ul style="list-style-type: none"> <li>• Use chart to identify genes on the chromosomes.</li> <li>• Use chart to identify structures of Purine base and Pyrimidine.</li> <li>• Use chart to indicate base pairing.</li> <li>• Use chart to isolate chromosome in the nucleus of a Eukaryotic cell.</li> </ul> | <ul style="list-style-type: none"> <li>- Charts</li> <li>- Specimen samples</li> <li>- Charts</li> <li>- Specimen samples</li> <li>- Charts</li> <li>- Specimen Samples</li> <li>- Charts</li> <li>- Specimen samples</li> </ul> |
| <b>General Objective 6.0:</b> Understand the properties, structures and reactions of monosaccharide |   |   |  |   |   |  |
| 7   | 6.1 Name monosaccharide systematically according to the   | <ul style="list-style-type: none"> <li>• Describe monosaccharide according to the number of carbon</li> </ul>   |  | 4.1 Identify experimentally optical activity in sugars  | <ul style="list-style-type: none"> <li>• Conduct practical measurement of optical activity in sugars using</li> </ul>   | <ul style="list-style-type: none"> <li>- Glassware</li> <li>- Polari meter</li> <li>- Reagent such as</li> </ul>   |

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|   | <p>number of carbon atoms in the molecule.</p> <p>6.2 Explain the concepts of stereoisomerism optical isomerism and the property of optical activity.</p> <p>6.3 Distinguish between epimers, stereoisomer and optical isomers.</p> <p>6.4 List examples of other biochemical substances that relate to the plane of polarized light.</p> <p>6.5 Distinguish between Dextrorotary (+) &amp; Laevorotatory(-) compounds on one hand and D and L structure on the other hand.</p> | <p>atoms in the molecule.</p> <ul style="list-style-type: none"> <li>• Explain stereoisomerism optical isomerism and the property of optical activity.</li> <li>• Explain epimers, stereoisomer and optical isomers and their differences.</li> <li>• Explain plane polarized light.</li> <li>• Describe the differences between Dextrorotary (+) and laevorotatory(-) compounds</li> <li>• Describe the differences between D and L structure on the other hand.</li> </ul> |  | using polarimeter.              | polarimeter   | <ul style="list-style-type: none"> <li>➤ Bial's,</li> <li>➤ Benedict'</li> <li>➤ Etc</li> </ul> |
| 8 | 6.6 Explain the formation of  | <ul style="list-style-type: none"> <li>• Explain the formation of Pyronose and</li> </ul>  |  | 6.2 Carry out chemical tests to | <ul style="list-style-type: none"> <li>• Conduct appropriate chemical tests to</li> </ul> |   |

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|  | <p>Pyranoses and Furanoses of monosaccharide.</p> <p>6.7 Draw ring formula to represent glucose, fructose, ribose and ribulose.</p> <p>6.8 Define mutarotation in Monosaccharide.</p> <p>6.9 Draw structures to differentiate between anomers of named aldoses and ketoses.</p> <p>6.10 Outline the general reactions of monosaccharides due to OH and C=O functional groups.</p> <p>6.11 Outline methods for estimating reducing sugars</p> | <p>Furanose by monosaccharide</p> <ul style="list-style-type: none"> <li>• Explain ring, Haworth representation of glucose, fructose, ribose and ribulose.</li> <li>• Explain mutarotation in Monosaccharide.</li> <li>• Describe structures to differentiate between anomers of a named Aldose and Ketose.</li> <li>• Explain the general reactions of monosaccharides due to OH and C=O functional group.</li> <li>• Explain methods of estimating reducing sugars.</li> </ul> |  | <p>identify reducing sugars.</p> | <p>identify reducing sugar e.g. glucose</p> |  |
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| General Objective 7.0: Understand the structures and uses of Disaccharides and Polysaccharides |  |  |           |  |   |  |
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| 9-10   | <p>7.1 Define glycosidic linkage.</p> <p>7.2 Write equation for the formation of glycosidic linkage.</p> <p>7.3 List the different types of glycosidic linkages.</p> <p>7.4 State the sources of some common disaccharides (non-reducing sugar).</p> <p>7.5 Draw the structures of disaccharides in 5.4 above.</p> <p>7.6 Distinguish between reducing and non-reducing disaccharides.</p> <p>7.7 State the biological and industrial importance of disaccharides.</p> | <ul style="list-style-type: none"> <li>• Explain glycosidic bond (i.e. 1-4 linkage).</li> <li>• Describe equations for the formation of glycosidic linkage.</li> <li>• Describe different types of glycosidic linkages (bond).</li> <li>• Explain the sources of some common disaccharides (non-reducing sugar)</li> <li>• Explain the structures of disaccharides in 5.4.</li> <li>• Describe reducing and non-reducing disaccharides and their differences.</li> <li>• Explain biological and industrial importance of disaccharides.</li> </ul> | Classroom | <p>7.1 Set up an appropriate experiment for carrying out hydrolysis of a disaccharide (non-reducing sugar) to give monosaccharide (reducing sugar)</p> <p>7.2 Hydrolyse a disaccharide (non-reducing sugar) to give monosaccharide (reducing sugar)</p> <p>7.3 Test for presence of reducing monosaccharide from experiment in 7.2.</p> <p>7.4 Carry out practical</p> | <ul style="list-style-type: none"> <li>• Prepare a chemical test using Hydrochloric acid (HCl) for hydrolyzing a disaccharide (non-reducing sugar) to yield monosaccharide (reducing sugar).</li> <li>• Demonstrate hydrolysis on disaccharide (non-reducing sugar) to give monosaccharide (reducing sugar).</li> <li>• Indicate the presence of reducing sugar using Fehling or Benedict's solution.</li> <li>• Conduct practical identification of reducing and non-reducing starch and glycogen</li> </ul> | <ul style="list-style-type: none"> <li>- Test tube</li> <li>- Hydrochloric Acid</li> <li>- A named Disaccharide (non-reducing sugar)</li> <li>- Benedict solution</li> <li>- Fehling solution</li> <li>- Glasswares</li> <li>- Burners</li> <li>- Water bath</li> </ul> <p>- Charts with structures of 1-4 and 1-6 glycosidic linkage.</p> <p>- Chart of Amylose and</p> |

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|  | <p>7.8 List the common polysaccharides and their sources.</p> <p>7.9 List the monomers of polysaccharides.</p> <p>7.10 State the types of glycosidic linkages in polysaccharides.</p> <p>7.11 Draw outline of the pattern and arrangement of the sub-units in the following:<br/> i) Amylose<br/> ii) Amylopectin<br/> iii) Glycogen<br/> iv) Cellulose</p> <p>7.12 State the biological and industrial importance of polysaccharides.</p> | <ul style="list-style-type: none"> <li>• Explain common polysaccharides and their sources.</li> <li>• Explain common polysaccharides and their sources with examples.</li> <li>• Explain common monomers and their sources with specific examples.</li> <li>• Explain types of glycosidic linkages in polysaccharides.</li> <li>• Explain the pattern and arrangement of the following sub-units of a disaccharide: <ul style="list-style-type: none"> <li>- Amylose</li> <li>- Amylopectin</li> <li>- Glycogen</li> <li>- Cellulose</li> </ul> </li> <li>• State the biological and industrial importance of polysaccharides.</li> </ul> |  | <p>identification of reducing and non-reducing starch and glycogen</p> <p>7.6 Write reports on identification of non-reducing sugar (disaccharides) and reducing sugar (monosaccharides) before and after hydrolysis respectively.</p> <p>7.7 Identify differences between starch and glycogen.</p> | <ul style="list-style-type: none"> <li>• Grade reports on identification of non-reducing sugar</li> <li>• Write reports on identification of non-reducing sugar (disaccharides) and reducing sugar (monosaccharides) before and after hydrolysis respectively.</li> <li>• Demonstrate how to identify differences between starch and glycogen.</li> </ul> | <p>Amylopectin.</p> |
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|  | 7.13 Distinguish between starch and glycogen.   | <ul style="list-style-type: none"> <li>Explain the differences between starch and glycogen.</li> </ul>   |           |   |   |   |
| <b>General Objective 8.0:</b> Understand nature, biological and industrial importance of lipids. |   |  |           |   |   |   |
| 11-12  | <p><b>Lipids</b></p> <p>8.1 Define lipids as fats and fat-like substance.</p> <p>8.2 Define fat as mono, di and tri – carboxylic esters of glycerides e.g monoglycerides diglycerides and triglycerides.</p> <p>8.3 List natural sources of fats.</p> <p>8.4 Classify lipids into simple and complex lipids.</p> <p>8.5 List members of classes of lipids in 6.4 above.</p> <p>8.6 Draw structures of named saturated</p> | <ul style="list-style-type: none"> <li>Explain lipids as fats and fat-like substance.</li> <li>Describe fats as mono, di and tri – carboxylic esters e.g (TAG) - monoglycerides, diglycerides and triglycerides.</li> <li>Explain natural sources of fats.</li> <li>Explain the classification of lipids into simple and complex lipids.</li> <li>Explain members of each class of lipid e.g. simple and complex lipids and their sub-classification.</li> <li>Illustrate structures of</li> </ul> | Classroom | <p>8.1 Test for fats in the laboratory e.g. by solubility test.</p> <p>8.2 Carry out assignment on practical test for fats by solubility test.</p> <p>8.3 Carry out simple chemical tests for triacylglycerides</p> | <ul style="list-style-type: none"> <li>Conduct a practical test in the laboratory for identification of fats by solubility test.</li> <li>Assist student to carry out practical test for presence of fats by solubility test in the laboratory.</li> <li>Carry out simple chemical tests for triacylglycerides</li> </ul> | <p>Glasswares</p> <p>Bunsin burner</p> <p>Water bath</p> <p>Saturated and unsaturated fat</p> <p>Liquid and solid fats.</p> |



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|  | <p>and unsaturated fatty acids most abundant in acylglycerols.</p> <p>8.7 Explain why fatty acids obtained from lipids are almost always even numbered carbon atoms.</p> <p>8.8 Distinguish between essential and non-essential fatty acids.</p> <p>8.9 Write the general chemical structure of mon, di- and triacylglycerols.</p> <p>8.10 Write the general chemical structure of a named triacylglycerols.</p> <p>8.11 Write the structure of</p> | <p>named saturated and unsaturated fatty acids (TAG) most abundant in acylglycerols.</p> <ul style="list-style-type: none"> <li>• Explain why fatty acids obtained from lipids are almost even numbered carbon atoms.</li> <li>• Explain essential and non-essential fatty acids and their differences.</li> <li>• Describe general chemical structure of mono, di- and triacylglycerols.</li> <li>• Write the general chemical structure of a named triacylglycerols.</li> </ul> |  |  |  |  |
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|  | <p>mono-di-and triacylglycerols.</p> <p>8.12 State physical properties and uses of Triglycerides</p>  | <ul style="list-style-type: none"> <li>• Write the structure of mono-di-and triacylglycerols.</li> <li>• State physical properties and uses of Triglycerides</li> </ul>   |             |   |   |                     |
|  | <p>8.13 Describe using equation the hydrolysis of TAG.</p> <p>8.14 Describe with equation the hydrolysis of triglycerides.</p> <p>8.15 Describe the hydrolysis of triacylglycerols with alkali to yield a mixture of soap and glycerol – (saponification)</p> <p>8.16 Define saponification number, iodine number and free fatty acids (FFA) value of fats and oils (acylglycerols)</p> | <ul style="list-style-type: none"> <li>• Explain using equation the hydrolysis of TAG.</li> <li>• Explain hydrolysis of TAG using alkalis in the manufacture of soap (saponification)</li> <li>• Explain using equation the hydrolysis of triacylglycerols with alkali to yield a mixture of soap and glycerol – (saponification).</li> <li>• Explain saponification number, iodine number and free fatty acids (FFA) value of fats and oils (acylglycerols)</li> </ul> | White board | <p>8.4 Identify equation of TAG hydrolysis.</p> <p>8.5 Identify Alkali hydrolysis of TAG in the manufacture of soap in the laboratory.</p> <p>8.6 Carry out saponification in the laboratory.</p> <p>8.7 Carry out hardening of oil in the laboratory.</p> <p>8.8 Identify structures of glycerophosphides and its <b>moieties</b>.</p> | <ul style="list-style-type: none"> <li>• Generate equation of TAG hydrolysis.</li> <li>• Conduct practicals on the Alkali hydrolysis of TAG in the manufacture of soap in the laboratory.</li> <li>• Demonstrate saponification reaction using TAG/Glycerol in the making of soap.</li> <li>• Demonstrate the process of hardening of oil in the laboratory.</li> <li>• Describe with drawings the</li> </ul> | Durable electronics |

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|  | <p>8.17 Explain the significance of the values listed in 8.16 above.</p> <p>8.18 Explain the hardening of oils.</p> <p>8.19 Relate oil hardening to commercial production of fats as margarine.</p> <p>8.20 Draw the structural formula of phosphatidic acid (<math>H_2PO_4</math>)</p> <p>8.21 Explain that phosphatidic (<math>H_2PO_4</math>) acid is the parent compound to phosphoglycerides</p> <p>8.22 Draw the structural formula of the following: -<br/>glycerophosphatides:<br/>(a)<br/>Phosphatidylethanolai</p> | <ul style="list-style-type: none"> <li>• Explain the significance of the values listed in 8.16 above.</li> <li>• Explain oil hardening.</li> <li>• Relate oil hardening to commercial production of fats as margarine.</li> <li>• Describe structure of phosphatidic acid (<math>H_2PO_4</math>)</li> <li>• Explain that phosphatidic acid (<math>H_2PO_4</math>) is the parent compound to phosphoglycerides.</li> <li>• Draw structural formula of the following: -<br/>Glycerophosphatides and its moiety:<br/>(a)</li> </ul> |  |  | <p>structures of glycerophosphides and its <b>moieties</b>.</p> |  |
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|  | me<br>(b) Phosphatidylcholine<br>(c) Phosphatidylserine<br>(d)<br>Phosphadidylglycerol | Phosphatidylethanolaim<br>(b) Phosphatidylcholine<br>(c) Phosphatidylserine<br>(d) Phosphadidylglycerol |  |  |  |  |
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**PROGRAMME :** National Innovation Diploma In Energy Health Science

**COURSE :** HUMAN ANATOMY II

**CODE :** PTY 121

**DURATION :** 8 HR/WEEK

**UNITS :**

**GOAL :** To develop an understanding of the anatomical structure of the trunk, head and neck and the ability to identify and palpate with skill major anatomical structures.

**GENERAL OBJECTIVES:** On completion of this module students should be able to:

1.0 Describe the anatomical structure of the human thorax and identify and palpate major anatomical landmarks and structures

2.0 Describe the anatomical structure of the human abdomen and identify and palpate major anatomical landmarks and structures.

3.0 Describe the anatomical structure of the human pelvis and identify and palpate major anatomical landmarks and structures

4.0 Describe the anatomical structure of the human spine and identify and palpate major anatomical landmarks and structures

5.0 Describe the anatomical structure of the human head and neck, and identify and palpate major anatomical landmarks and structures

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |   |   |   |   |   |   |
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| <b>COURSE:</b> HUMAN ANATOMY II  |   |   | <b>COURSE CODE:</b> PTY 121                       |   | <b>CONTACT HOURS:</b> 8 hours / week  |   |
| <b>GOAL:</b> To develop an understanding of the anatomical structure of the human trunk, head and neck and the ability to identify and palpate with skill major anatomical structures. |   |   |   |   |   |   |
| <b>Course Specification: Theoretical</b>   |   |   |   | <b>Practical Content</b>  |   |   |
| <b>General Objective 1.0:</b> Describe the anatomical structure of the human thorax and identify and palpate major anatomical landmarks and structures                                 |   |   |   |   |   |   |
| <b>Week</b>  | <b>Specific Learning Outcomes</b>                       | <b>Teacher's Activities</b>   | <b>Resource</b>                                   | <b>Specific Learning Outcomes</b>   | <b>Teacher's Activities</b>   | <b>Resource</b>   |
|  | 1.1 Describe the anatomical structures of thoracic wall | Describe the structure of the thoracic wall, Ribs, Sternum, & Costal joints | Overhead projector<br>Data projector<br>Skeletons | 1.1 Demonstrate ability to identify and palpate thoracic wall structures.<br><br>1.2 Demonstrate the actions of the muscles.<br><br>1.3 Demonstrate the movements of all the joints.<br><br>1.4 Identify thoracic | Identify the structures of thoracic wall on plastic model of human being.<br><br>Practice identifying thoracic wall structures on each other.<br><br>Demonstrate joint movement and muscle action<br><br>Practice | Plastic models of human body<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds |

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|  |  |   |   | structures on radiographs<br>Radiographic anatomy.   | demonstrating joint movement and muscle action.   |   |
|  | 1.2 Describe the anatomical structures of thoracic wall.               | Describe the structure of the thoracic wall, Diaphragm, Intercostals muscles, Intercostals nerves and vessels | Overhead projector<br>Data projector<br>Skeletons | 1.5 Demonstrate ability to identify and palpate thoracic wall structures.<br>1.6 Demonstrate the actions of the muscles.<br>1.7 Demonstrate the movements of all the joints.<br>1.8 Identify thoracic structures on radiographs<br>Radiographic anatomy. | Identify the structures of thoracic wall on plastic model of human being.<br>Practice identifying thoracic wall structures on each other.<br>Show students how to demonstrate joint movement and muscle action.<br>Practice demonstrating joint movement and muscle action. | Plastic models of human body<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds |
|  | 1.3 Describe the anatomical structures and contents of thoracic cavity | Describe the structure and contents of the thoracic cavity<br>Heart and Great vessels                         | Overhead projector<br>Data projector<br>Skeletons | 1.9 Demonstrate ability to identify and palpate thoracic cavity structures.<br>1.10 Identify thoracic  | Identify the structures of thoracic cavity on plastic model of human being.<br><br>Demonstrate surface  | Plastic models of human body.<br><br>Wall charts of bones and   |

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|  |  |  |  | cavity structures on radiographs.<br><br>1.11 Demonstrate skill in identifying and surface marking of the thoracic structures.  | marking of thoracic structures. Students to practice on each other.   | muscles.<br><br>Skeletons.<br><br>Practical room with beds.   |
|  | 1.4 Describe the anatomical structures and contents of thoracic cavity | Describe the structure and contents of the thoracic cavity, Lungs, Trachea and Bronchi | Overhead projector – Data projector<br><br>Skeletons | 1.12 Demonstrate ability to identify and palpate thoracic cavity structures.<br><br>1.13 Identify thoracic cavity structures on radiographs.<br><br>1.14 Demonstrate skill in identifying and surface marking of the thoracic structures. | Identify the structures of thoracic cavity on plastic model of human being.<br><br>Demonstrate surface marking of thoracic structures for students to practice on each other. | Plastic models of human body.<br><br>Wall charts of bones and muscles.<br><br>Skeletons.<br><br>Practical room with beds. |
| <b>General Objective 2.0:</b> Describe the anatomical structure of the human abdomen and identify and palpate major anatomical landmarks and structures. |  |  |  |   |   |   |
|  | 2.1 Describe the anatomical  | Describe the structure of the  | Overhead   | 2.1 Demonstrate skill in identifying and  | Identify the structures of  | Plastic models of   |

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|  | structures of abdominal wall | abdominal wall,<br>Anterior abdominal wall muscles and Lateral abdominal wall muscles | projector<br>Data projector<br>Skeletons | palpating surface landmarks of the abdominal wall.<br><br>2.2 Demonstrate the actions of the muscles.<br><br>2.3 Demonstrate the movements of all the joints | abdominal wall on plastic model of human being or on cadaver .<br><br>Demonstrate important landmarks on themselves .<br><br>Demonstrate palpation of abdominal structures and muscles.<br><br>Students to practice on each other<br><br>Show students how to demonstrate joint movement and muscle action<br><br>Practice demonstrating joint movement and muscle action | abdomen<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds |
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|  | 2.2 Describe the anatomical structures and contents of abdominal cavity. | Describe the structure of the abdominal cavity<br><br>Stomach,<br>Large intestine,<br>Small intestine<br>and<br>Colon. | Overhead projector<br><br>Data projector<br><br>Skeletons | 2.5 Demonstrate ability to identify and palpate abdominal cavity structures.<br><br>2.6 Identify abdominal cavity structures on radiographs.<br><br>2.7 Demonstrate skill in identifying and surface marking of the abdominal structures. | Identify the structures of abdominal cavity on plastic model of human being.<br><br>Demonstrate surface marking of abdominal structures.<br><br>Allow Students to practice on each other. | plastic models of human body<br><br>Anatomy laboratory.<br><br>Wall charts of bones and muscles.<br><br>Skeletons.<br><br>Practical room with beds. |
|  | 2.3 Describe the anatomical structures and contents of abdominal cavity  | Describe the structure of the abdominal cavity;<br><br>Liver,<br>Pancreas and<br>Gall bladder                          | Overhead projector<br><br>Data projector<br><br>Skeletons | 2.8 Demonstrate ability to identify and palpate abdominal cavity structures.<br><br>2.9 Identify abdominal cavity structures on radiographs.  | Identify the structures of abdominal cavity on plastic model of human being.<br><br>Demonstrate surface marking of abdominal structures.<br><br>Allow Students to practice on each other  | Plastic models of human body<br><br>Wall charts of bones and muscles.<br><br>Skeletons.<br><br>Practical room                                       |

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|  |   |   |   | 2.10 Demonstrate skill in identifying and surface marking of the abdominal structures  |   | with beds.   |
|  | 2.4 Describe the anatomical structures and contents of abdominal cavity | Describe the structure of the abdominal cavity;<br><br>Kidneys and Great vessels                              | Overhead projector<br><br>Data projector<br><br>Skeletons | 2.1 1 Demonstrate ability to identify and palpate abdominal cavity structures<br><br>2.12 Identify abdominal cavity structures on radiographs.<br>2.13 Demonstrate skill in identifying and surface marking of the abdominal structures. | Identify the structures of abdominal cavity on plastic model of human being.<br><br>Demonstrate surface marking of abdominal structures. Students to practice on each other | Plastic models of human body<br><br>Wall charts of bones and muscles.<br><br>Skeletons.<br><br>Practical room with beds. |
| <b>General Objective 3.0:</b> Describe the anatomical structure of the pelvis and identify and palpate major anatomical landmarks and structures |   |   |   |  |   |  |
|  | 3.1 Describe the anatomical structures and contents of pelvic region    | Describe the structure and contents of the pelvic wall<br><br>Inguinal ligament, Pelvic bones & Pelvic joints | Overhead projector<br><br>Data projector<br><br>Skeletons | 3.1 Demonstrate ability to identify and palpate pelvic structures.<br><br>3.2 Demonstrate the actions of the   | Identify the structures of pelvic wall, pelvic cavity and perineum on plastic model of human being.<br><br>Demonstrate the surface marking of the                           | Plastic models of pelvis & genitalia<br><br>Wall charts of bones and muscles<br><br>Skeletons                            |

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|  |   |  |  | <p>muscles.</p> <p>3.3 Demonstrate the movements of all the joints.</p> <p>3.4 Identify pelvic wall, cavity and perineum structures on radiographs.</p> <p>3.5 Demonstrate skill in identifying and surface marking of the pelvis and its structures</p> | <p>pelvic region.</p> <p>Allow Students to practice on each other</p> <p>Demonstrate joint movement and muscle action where possible</p> <p>Practice demonstration of joint movement and muscle action of the pelvic region.</p> | <p>Practical room with beds</p>  |
|  | <p>3.2 Describe the anatomical structures and contents of pelvic region</p> | <p>Describe the structure and contents of the pelvic cavity and perineum;</p> <p>External genitalia, Internal reproductive organs ( male &amp; female) and Bladder</p> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>3.6 Demonstrate ability to identify and palpate pelvic structures.</p> <p>3.7 Identify pelvic wall, cavity and perineum structures on radiographs.</p> <p>3.8 Demonstrate skill in identifying and surface marking of the pelvis and its</p>          | <p>Identify the structures of pelvic wall, pelvic cavity and perineum on plastic model of human being.</p> <p>Students to practice on each other</p>   | <p>Plastic models of pelvis &amp; genitalia</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> |

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| <b>General Objective 4.0:</b> Describe the anatomical structure of the human spine and identify and palpate major anatomical landmarks and structures |  |   |   |  |   |  |
|   | 4.1 Describe the anatomy of thoracic spine | Explain the anatomy of Bones (thoracic vertebrae and ribs, Joints (thoracic spine joints, cost vertebral joints), Muscles & Nerves ( spinal cord) | Overhead projector<br>Data projector<br><br>Skeletons | 4.1 Demonstrate skills in identifying structures of thoracic spine.<br><br>4.2 Demonstrate the actions of the muscles.<br><br>4.3 Demonstrate the movements of all the joints.<br><br>4.4 Identifying thoracic spine region structures on radiographs.<br><br>4.5 Demonstrate skill in surface marking of thoracic spine region.<br><br>4.6 Demonstrating joint movement and muscle action of the thoracic spine | Demonstrate skills in identifying structures of thoracic spine region on plastic model of man.<br><br>Demonstrate surface marking of this region.<br><br>Allow students to practice on each other<br><br>Show how to demonstrate joint movement and muscle action.<br><br>Demonstrate skill in surface marking of thoracic spine region.<br><br>Students to practice demonstrating joint movement and | Wall charts of bones and muscles<br><br>Articulated spine<br><br>Skeletons<br><br>Practical room with beds |

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|  |   |  |   | region.   | muscle action of the thoracic spine region.  |   |
|  | 4.2 Describe the anatomy of lumbar and sacral spine | Explain the anatomy of Bones (lumbar and sacral vertebrae),<br><br>Joints (lumbar and sacro-iliac joints),<br>Muscles & Nerves (spinal cord) | Overhead projector<br><br>Data projector<br><br>Skeletons | 4.7 Demonstrate skills in identifying structures of lumbar and sacral spine regions.<br><br>4.8 Demonstrate the actions of the muscles.<br><br>4.9 Demonstrate the movements of all the joints.<br><br>4.10 Identify lumbar and sacral spine region structures on radiographs.<br><br>4.11 Practice demonstration of joint movement and | Demonstrate skills in identifying structures of lumbar and sacral spine regions on plastic model of human being.<br><br>Demonstrate surface marking of this region.<br><br>Allow students to practice on each other<br><br>Show students how to demonstrate joint movement and muscle action<br><br>Identify lumbar and sacral spine region structures on radiographs.<br><br>Students to practice demonstrating joint | Wall charts of bones and muscles<br><br>Skeletons<br><br>Articulated spines<br><br>Practical room with beds |

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|  |                                   |  |  | <p>muscle action of the lumbar and sacral spine regions.</p> <p>4.12 Demonstrate skill in surface marking of lumbar and sacral spine regions</p>   | <p>movement and muscle action of the lumbar and sacral spine regions.</p> <p>Demonstrate skill in surface marking of lumbar and sacral spine regions.</p>  |   |
| <b>General Objective 5.0:</b> Describe the anatomical structure of the human head and neck, and palpate major anatomical landmarks and structures. |                                   |  |  |  |  |   |
|  | 5.1 Describe the anatomy of head. | Explain anatomy of Bones of the skull, Muscles, Nerves (brain) & Vessels | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>5.1 Demonstrate skills in identifying structures of head.</p> <p>5.2 Demonstrate the actions of the muscles.</p> <p>5.3 Identifying head and neck region structures on radiographs.</p> | <p>Demonstrate skills in identifying structures of head on plastic model of human being.</p> <p>Demonstrate surface marking of this region. Students to practice on each other.</p> <p>Demonstrate skills in identifying structures of the brain on plastic model of human</p> | <p>Plastic models of brain</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> |

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|  |                                   |  |  | <p>5.4 Demonstrate skill in surface marking of head.</p> <p>5.5 Students to practice demonstrating muscle action.</p>   | <p>being.</p> <p>Show students how to demonstrate muscle action of the head.</p> <p>Students to practice demonstrating muscle action.</p>  |   |
|  | 5.2 Describe the anatomy of neck. | <p>Explain the anatomy of the Bones of the cervical spine,</p> <p>Joints (cervical spine joints, Muscles, Nerves (spinal cord) &amp; Vessels</p> | <p>Overhead projector</p> <p>Data projector</p> <p>Skeletons</p> | <p>5.6 Demonstrate skills in identifying structures of neck.</p> <p>5.7 Demonstrate the actions of the muscles of the neck.</p> <p>5.8 Demonstrate the movements of all the joints of the neck.</p> <p>5.9 Identify head and neck region structures on radiographs.</p> <p>5.10 Demonstrate skill in surface marking of head and neck regions</p> | <p>Demonstrate skills in identifying structures of neck regions on plastic model of human being.</p> <p>Demonstrate surface marking of the neck region on radiographs.</p> <p>Students to practice on each other.</p> <p>Students to practice demonstrating joint movement and</p> | <p>Plastic models of brain</p> <p>Wall charts of bones and muscles</p> <p>Skeletons</p> <p>Practical room with beds</p> |

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|  |   |  |   | 5.10 Students to practice demonstrating joint movement and muscle action.   | muscle action.<br>Show students how to demonstrate joint movement and muscle action of the neck.   |  |
|  | 5.3 Describe the anatomy of the trunk head and neck | Revise the anatomy of this region, emphasizing the major roles of the structures and functional significance | Overhead projector<br>Data projector<br>Skeletons | 5.11 Demonstrate skills in identifying structures of the trunk, head and neck.<br><br>5.12 Demonstrate the actions of the muscles of the trunk, head and neck.<br><br>5.13 Demonstrate the movements of all the joints of the trunk, head and neck.<br><br>5.14 Identify Trunk, head and neck | Students to practice the anatomical skills learned in this course.<br>Teacher to observe and help correct problems.<br><br>Organize tutorials to go over areas that are difficult<br><br>Practice for the practical examination.<br><br>Demonstrate the movements of all the joints of the trunk, head and neck.<br><br>Identify trunk, head and neck region | Plastic models of brain<br><br>Wall charts of bones and muscles<br><br>Skeletons<br><br>Practical room with beds |



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|  |  |  |  | region structures on radiographs<br>5.15 Demonstrate skill in surface marking of the trunk, head and neck regions. | structures on radiographs><br>Demonstrate skill in surface marking of the trunk, head and neck regions. |  |
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**PROGRAMME :** National Innovation Diploma In Energy Health Science  
**COURSE :** HUMAN PHYSIOLOGY II  
**CODE :** PTY 122  
**DURATION :** 4 HR/WEEK  
**UNITS :**

**GOAL :** To develop theoretical and practical knowledge of the physiology of the nervous system in relation to the work of assistant physiotherapists..

**GENERAL OBJECTIVES:** On completion of this module students should be able to:

- 1.0 Understand the functions of the central nervous system
- 2.0 Understand the functions of the autonomic system
- 3.0 Understand the functions of the spinal cord and peripheral nervous system
- 4.0 Understand the transmission of a nerve impulse
- 5.0 Understand the functions of the abdominal and pelvic organs and the endocrine, system
- 6.0 Know in broad terms the functions of the special senses

| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Science  |  |   |  |   |  |                             |
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| <b>COURSE:</b> HUMAN PHYSIOLOGY II  |  |   | <b>COURSE CODE:</b> PTY 122            |   | <b>HOURS:</b> 4 hours / week   |                             |
| <b>GOAL:</b> To develop theoretical and practical knowledge of the physiology of the nervous system in relation to the work of assistant physiotherapists.. |  |   |  |   |  |                             |
| <b>Course Specification: Theoretical</b>  |  |   |  | <b>Practical Content</b>                                |  |                             |
| <b>General Objective 1.0:</b> Understand the function of the central nervous system   |  |   |  |   |  |                             |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>  | <b>Teacher's Activities</b>   | <b>Resource</b>                        | <b>Specific Learning Outcomes</b>                       | <b>Teacher's Activities</b>  | <b>Resource</b>             |
|   | 1.1 Describe the position and structure of the major parts of the brain. | Explain the structure of the brain:<br>- Cerebrum<br>- Midbrain<br>- Cerebellum | Overhead projector –<br>Data Projector | 1.1 Identify the structure and arrangement of the brain | Organize tutorials to develop an awareness of the structure and arrangement of the brain | Plastic models of the brain |
|   | 1.2 Describe the position and structure of the major parts of            | Explain structure of the brain:<br>- Medulla<br>- Pons                          |  |   | Discuss the structure of the brain in small groups, using plastic models of the brain    | Pictures of the brain       |

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|  | the brain.   | - Thalamus   |  |   | for assistance.   |  |
|  | 1.3 Describe the functions of the cerebellum, mid brain and cerebrum | Explain the functions of the:<br>- Cerebrum<br>- Midbrain<br>- Cerebellum          | Overhead projector –<br>Data Projector | 1.4 Identify the role of the cerebellum, mid brain and cerebrum in human function | Organize tutorials to illustrate the importance of cerebellum, mid brain and cerebrum and relate their structure to their functions | Plastic models of the brain<br><br>Pictures of the brain |
|  | 1.4 Describe the functions of the medulla, pons and thalamus         | Introductory lectures on the function of the:<br>- Medulla<br>- Pons<br>- Thalamus | Overhead projector –<br>Data Projector | 1.5 Explain the role of the medulla, pons and thalamus in human movement          | Organize tutorials to discuss the importance of these structures and relate their structure to their functions.                     | Plastic models of the brain<br><br>Pictures of the brain |
|  | 1.5 Describe the functions of the motor and sensory pathways.        | Explain Motor and sensory pathways   | Overhead projector<br><br>Data         | 1.6 Explain the role of the motor and sensory pathways in the control of          | Organize tutorials to explain the importance of these structures and to relate their structure                                      | Plastic models of the brain<br><br>Pictures of           |

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|  |   |   | Projector                                | human movement.  | to the functions.   | the brain   |
| <b>General Objective 2.0:</b> Describe the structure and function of the autonomic system                          |   |   |  |  |   |   |
|  | 2.1 Explain the roles of the parasympathetic and sympathetic systems. | Explain the functions of the Autonomic nervous system | Overhead projector<br><br>Data Projector | 2.1 Relate the functions of the autonomic nervous system to human movement.  | Organize tutorials to discuss the importance of autonomic nervous system and relate their structure to the functions. | Plastic models of the brain<br><br>Pictures of the brain  |
| <b>General Objective 3.0:</b> Describe the structure and function of the spinal cord and peripheral nervous system |   |   |  |  |   |   |
|  | 3.1 Describe the structure of the spinal cord .                       | Explain the structure of Spinal cord<br>Spinal nerves | Overhead projector –<br>Data Projector   | 3.1 Identify the functions of the spinal cord, spinal nerves<br><br>3.2 Relate the function of these structures to physiotherapy | Organize tutorials to discuss the importance of these structures and relate their structure to the functions.         | Plastic models of the spinal cord and peripheral nerves<br>Pictures of the spinal cord and peripheral nerves. |
|  | 3.2 Describe the structure of the peripheral nerves                   | Explain the structure of peripheral nerves            | Overhead projector<br><br>Data Projector | 3.3 Explain the functions of the peripheral nerves.  | Organize tutorials to explain the importance of these structures.   | Plastic models of the spinal cord and peripheral nerves   |

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|   |  |   |   | <p>3.4 Relate the function of these structures to physiotherapy.</p> <p>3.5 Practice marking the trace of nerves on one another.</p> | <p>Relate the structure of peripheral nerves to their functions.</p> <p>Describe the course of the major nerves.</p> <p>Allow students to practice marking the trace of nerves on their bodies.</p> | <p>Pictures of the spinal cord and peripheral nerves</p> |
| <b>General Objective 4.0</b> Understand the transmission of a nerve impulse |  |   |   |  |   |  |
|   | 4.1 Describe the conduction of a nerve impulse | <p>Explain:</p> <p>Nerve transmission</p> <p>Electrophysiology of neurons</p> <p>Synapses</p> | <p>Overhead projector –</p> <p>Data Projector</p> | 3.6 Demonstrate why knowledge of nerve conduction is important in the work of a physiotherapy assistant.                             | <p>Organize tutorials to give more details on nerve functions and relate same to physiotherapy</p>  | Physiology text books                                    |
|   | 4.2 Describe the role of an action             | <p>Explain :</p> <p>Action potential</p>  | Overhead projector                                | 3.7 Demonstrate why knowledge  | Organize tutorials to give more   | Physiology text books                                    |

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|  | potential and a neuromuscular unit.  | Neuro muscular unit   | Data Projector                           | of action potential and neuromuscular unit are important to physiotherapists   | details on nerve function and to relate this to physiotherapy.   |   |
| <b>General Objective 5.0:</b> Understand the functions abdominal and pelvic organs and the endocrine, system |  |   |  |  |  |   |
|  | 5.1 Describe the digestive system and its functions.<br><br>5.2 Describe the structure of the renal system.<br><br>5.3 Explain the control and function of the | Explain the structure the digestive system<br><br>Explain the functions of the digestive system viz, Digestion, absorption, gastric and intestinal motility,<br><br>Structure and function of the Renal system: Urine formation | Overhead projector<br><br>Data Projector | 5.1 Identify the importance of the digestive system on normal human life<br><br>5.2 Identify the importance of the renal system in homeostasis | Organize tutorials to discuss the importance of the digestive system and its components.<br><br>Organize tutorials to discuss the importance of the renal system in homeostasis. | Physiology text books<br><br>Plastic models of digestive and renal systems<br><br>Pictures of the digestive and renal systems |

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|  | renal system.  | Renal control of blood pressure & water balance.<br>Homeostasis   |  |  |  |   |
|  | 5.4 Describe the endocrine system.<br><br>5.5 Explain the production and function of the hormones.         | Explain: the Endocrine system<br><br>Explain the production and control of hormones, Hypothalamus, pituitary Adrenal glands, thyroid gland, pancreas. | Overhead projector<br><br>Data Projector | 5.3 Relate the endocrine system to human function.   | Organize tutorials to discuss the importance of these structures and relate their structure to functions.            | Physiology text books<br><br>Pictures of the endocrine glands                             |
|  | 5.5 Describe the structure of the reproductive system.<br><br>5.6 Explain the function of the reproductive | Explain the Reproductive system: Anatomy and structure ,<br><br>Explain Reproductive  | Overhead projector<br><br>Data-projector | 5.4 Explain the function of the reproductive system.<br><br>5.5 Discuss the importance of the reproductive system to | Organize tutorials to discuss the importance of the reproductive system and relate their structure to the functions. | Physiology text books<br><br>Plastic models of reproductive system<br><br>Pictures of the |



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|   | system.   | hormones   |   | physiotherapy  |  | reproductive system  |
| <b>General Objective 6.0:</b> Know in broad terms the functions of the special senses |   |  |   |  |  |  |
|   | <p>6.1 Describe the structure and function of:</p> <ul style="list-style-type: none"> <li>✓ The eye</li> <li>✓ The ear</li> <li>✓ The nose</li> <li>✓ The tongue</li> <li>✓ The skin</li> </ul> | <p>Explain giving a very brief overview of the structure of the main special senses listed in 6.1.</p> | <p>Overhead projector</p> <p>Data-projector</p> | <p>Identify on model or diagrams the component parts of the organs of special sense namely; Eye, Ear, Nose, Tongue and Skin</p> <p>List the functions of these special organs (senses), namely; Eye, Ear, Nose, Tongue and Skin.</p> | <p>Organize tutorials using models to deepen knowledge of the special senses, namely; Eye, Ear, Nose, Tongue and Skin</p> <p>Conduct Quiz on functions of special senses, namely; Eye, Ear, Nose, Tongue and Skin.</p> | <p>Plastic models of eye, ear, nose, tongue and skin.</p> <p>Pictures and Drawings of eye, ear, nose, tongue and skin.</p> |

**PROGRAMME :** National Innovation Diploma In Energy Health Science

**COURSE TITLE:** Introduction to Sociology

**COURSE CODE:** GNS 121

**DURATION:** 2 Hours

**COURSE UNIT:** 3

**GOAL:** This course is intended to provide the student with knowledge of basic elements of sociology and an understanding of the relationship between sociology and the other social sciences so that he can be equipped to understand the society and the changing environment in which he lives.

**GENERAL OBJECTIVES:**

On completion of this course, the student should be able to:

- 1.0 Understand Sociology as a body scientific knowledge.
- 2.0 Understand social group.
- 3.0 Know social institutions and their impacts on the society.
- 4.0 Understand culture and its influence on the individual, the group and the society in general.
- 5.0 Understand the process of socialization and its impact on the personality of the individual.
- 6.0 Understand the structure and the importance of the family as a basic universal social institution.
- 7.0 Know the meaning of social stratification and the variables associated with it.
- 8.0 Understand deviant behavior and the consequences of such behavior on social order.

9.0 Understand the mechanisms of social control and the roles of the individual in the control process.

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| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  |  |  |                                      |                                  |                             |                       |
| <b>COURSE:</b> Sociology  |  | <b>COURSE CODE:</b> SDV 114  |                                      | <b>CONTACT HOURS:</b> 2          |                             | <b>COURSE UNIT:</b> 3 |
| <b>GOAL:</b> This course is intended to provide the student with knowledge of basic elements of sociology and an understanding of the relationship between sociology and the other social sciences so that he can be equipped to understand the society and the changing environment in which he lives. |  |  |                                      |                                  |                             |                       |
| <b>COURSE SPECIFICATION:</b> THEORETICAL AND PRACTICAL CONTENTS   |  |  |                                      |                                  |                             |                       |
| <b>WEEK</b>   | <b>General Objective 1.0:</b> Understand Sociology as a body scientific knowledge. |  |                                      |                                  |                             |                       |
| 1.  | <b>THEORETICAL CONTENTS</b>  |  |                                      | <b>PRACTICAL CONTENTS</b>        |                             |                       |
|   | <b>Specific Learning Outcome</b>   | <b>Teacher's Activities</b>  | <b>Resources</b>                     | <b>Specific Learning Outcome</b> | <b>Teacher's Activities</b> | <b>Evaluation</b>     |
|   | 1.1 Define sociology.  | <ul style="list-style-type: none"> <li>Define sociology.</li> </ul>  | Books , journals, internet resources | Practical not applicable         |                             |                       |
|   | 1.2 Define the scope of Sociology and its methods.                                 | <ul style="list-style-type: none"> <li>Explain the scope of Sociology and its methods.</li> </ul>                            |                                      |                                  |                             |                       |
|   | 1.3 Summarise the historical development of Sociology.                             | <ul style="list-style-type: none"> <li>Explain the historical development of Sociology.</li> </ul>                           |                                      |                                  |                             |                       |
|   | 1.4 Analyse the inter-relationship of Sociology and the other social sciences.     | <ul style="list-style-type: none"> <li>Explain the inter-relationship of Sociology and the other social sciences.</li> </ul> |                                      |                                  |                             |                       |

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| <b>General Objective 2.0:</b> Understand social group.  |  |                                      |                          |  |  |
| 2.1 Define society.   | <ul style="list-style-type: none"> <li>Define society.</li> </ul>  | Books , journals, internet resources | Practical not applicable |  |  |
| 2.2 Identify the basic groups of society, e.g. aggregate, category social or formal groups.   | <ul style="list-style-type: none"> <li>Explain the basic groups of society, e.g. aggregate, category social or formal groups.</li> </ul>   |                                      |                          |  |  |
| 2.3 Differentiate between: <ul style="list-style-type: none"> <li>a) Voluntary and involuntary groups.</li> <li>b) In-groups and out-groups.</li> </ul> | <ul style="list-style-type: none"> <li>Differentiate between: <ul style="list-style-type: none"> <li>- Voluntary and involuntary groups.</li> <li>- In-groups and out-groups.</li> </ul> </li> </ul> |                                      |                          |  |  |
| 2.4 Name the characteristics of reference groups.   | <ul style="list-style-type: none"> <li>Name the characteristics of reference groups.</li> </ul>  |                                      |                          |  |  |
| <b>General Objective 3.0:</b> Know social institutions and their impacts on the society.  |  |                                      |                          |  |  |
| 3.1 Define social institutions.   | <ul style="list-style-type: none"> <li>Define social Institutions.</li> </ul>  | Books , journals, internet resources | Practical not applicable |  |  |
| 3.2 Identify basic social institutions.   | <ul style="list-style-type: none"> <li>Explain basic social institutions.</li> </ul>   |                                      |                          |  |  |
| 3.3 Delineate the most important characteristics of institutions in 3.2 above.  | <ul style="list-style-type: none"> <li>Delineate the most important characteristics of institutions in 3.2.</li> </ul>   |                                      |                          |  |  |
| 3.4 Enumerate the specific  | <ul style="list-style-type: none"> <li>Enumerate the</li> </ul>  |                                      |                          |  |  |

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|  | <p>functions of social institutions.</p> <p>3.5 Explain the concepts of:</p> <p>a) transfer of functions.</p> <p>b) competition and co-operation among institutions; and</p> <p>c) institutional universality and variation.</p>  | <p>specific functions of social institutions.</p> <ul style="list-style-type: none"> <li>• Explain the concepts of: <ul style="list-style-type: none"> <li>- transfer of functions.</li> <li>- competition and co-operation among institutions; and</li> <li>- Institutional universality and variation.</li> </ul> </li> </ul> |   |                                 |  |  |
| <p><b>General Objective 4.0:</b> Understand culture and its influence on the individual, the group and the society in general.</p> |   |   |   |                                 |  |  |
|  | <p>4.1 Define culture.</p> <p>4.2 Distinguished between material and non-material aspects of culture.</p> <p>4.3 Analyze culture as a mode of communication.</p> <p>4.4 Describe culture norms, values, folkways, and mores.</p> <p>4.5 Identify the influence of culture on the individual, group and society.</p> | <ul style="list-style-type: none"> <li>• Define culture.</li> <li>• Distinguished between material and non-material aspects of culture.</li> <li>• Explain culture as a mode of communication.</li> <li>• Explain the terms: culture norms, values, folkways, and mores.</li> <li>• Explain the influence of</li> </ul>         | <p>Books , journals, internet resources</p> | <p>Practical not applicable</p> |  |  |

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|  |   | culture on the individual, group and society.   |                         |   |   |                                      |                          |
| <b>General Objective 5.0:</b> Understand the process of socialization and its impact on the personality of the individual.       |   |   |                         |   |   |                                      |                          |
| 5.1 Define socialization.  | 5.2 List the four basic goals of socialization.   | 5.3 Identify the major agents of socialization – the family, the school, peer groups, mass media, etc.  | 5.4 Define personality. | 5.5 Explain the effects of nature and nurture on the personality of the individual. | <ul style="list-style-type: none"> <li>• Define socialization.</li> <li>• Explain the four basic goals of socialization.</li> <li>• Explain the major agents of socialization – the family, the school, peer groups, mass media, etc.</li> <li>• Explain personality.</li> <li>• Explain the effects of nature and nurture on the personality of the individual.</li> </ul> | Books , journals, internet resources | Practical not applicable |
| <b>General Objective 6.0:</b> Understand the structure and the importance of the family as a basic universal social institution. |   |   |                         |   |   |                                      |                          |
| 6.1 Define the family.   | 6.2 Describe the types of family grouping, e.g. nuclear family, extended family, compound family, family of procreation | <ul style="list-style-type: none"> <li>• Define the family.</li> <li>• Describe the types of family grouping, e.g. nuclear family,</li> </ul> |                         |   | Books , journals, internet resources  | Practical not applicable             |                          |

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|   | <p>and family of orientation.</p> <p>6.3 Outline the variations in marital forms:</p> <ul style="list-style-type: none"> <li>- monogamy</li> <li>- polygamy</li> <li>- polyandry</li> <li>- group marriage and ghost marriage.</li> </ul> <p>6.4 Enumerate the functions of the family, e.g. sexual, reproductive, socialization, economic</p> | <p>extended family, compound family, family of procreation and family of orientation.</p> <ul style="list-style-type: none"> <li>• Explain variations in marital forms: <ul style="list-style-type: none"> <li>- Monogamy</li> <li>- Polygamy</li> <li>- Polyandry</li> <li>- group marriage and ghost marriage.</li> </ul> </li> <li>• Enumerate the functions of the family, e.g. sexual, reproductive, socialization, economic.</li> </ul> |   |                                 |  |  |
| <b>General Objective 7.0:</b> Know the meaning of social stratification and the variables associated with it. |  |   |   |                                 |  |  |
|   | <p>7.1 Define social class.</p> <p>7.2 Define social mobility.</p>   | <ul style="list-style-type: none"> <li>• Give the definition of social class.</li> <li>• Give the definition of social mobility.</li> </ul>   | <p>Books , journals, internet resources</p> | <p>Practical not applicable</p> |  |  |

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|   | <p>7.3 Identify the basis indications of social classes and their roles in social mobility, income, occupation and education, race, religion, nationality, sex, location of residence, family background.</p> <p>7.4 Examine the impact of the variables in 7.3 on groups and interpersonal relationships.</p>    | <ul style="list-style-type: none"> <li>• Explain the basis indications of social classes and their roles in social mobility, income, occupation and education, race, religion, nationality, sex, location of residence, family background.</li> <li>• Explain the impact of the variables as listed in interpersonal relationships.</li> </ul> |   |                                 |  |  |
| <p><b>General Objective 8.0:</b> Understand deviant behavior and the consequences of such behavior on social order.</p> |   |  |   |                                 |  |  |
|   | <p>8.1 Define deviant behavior.</p> <p>8.2 Enumerate the various characteristics of deviant behavior.</p> <p>8.3 State the various conditions that can give rise to deviant behavior e.g.</p> <ul style="list-style-type: none"> <li>- relative deprivation.</li> <li>- anomie.</li> <li>- alienation.</li> </ul> | <ul style="list-style-type: none"> <li>• Define deviant behavior.</li> <li>• Explain various characteristics of deviant behavior.</li> <li>• Explain the various conditions that can give rise to deviant behavior e.g.</li> <li>- relative</li> </ul>   | <p>Books , journals, internet resources</p> | <p>Practical not applicable</p> |  |  |



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|  | <ul style="list-style-type: none"> <li>- role conflict.</li> <li>- absence of rules and regulations.</li> <li>- influence of group</li> <li>- defense mechanism</li> </ul> <p>8.4 Explain the consequences of deviant behavior in relation to social organization.</p> | <p>deprivation.</p> <ul style="list-style-type: none"> <li>- anomie.</li> <li>- alienation.</li> <li>- role conflict.</li> <li>- absence of rules and regulations.</li> <li>- influence of group</li> <li>- defense mechanism.</li> <li>-</li> </ul> <p>8.4 Explain the consequences of deviant behavior in relation to social organization.</p> |   |                                 |  |  |
| <p><b>General Objective 9.0:</b> Understand the mechanisms of social control and the roles of the individual in the control process.</p> |  |  |   |                                 |  |  |
|  | <p>9.1 State the functions of rules and regulations in society as a mechanism for social control and order.</p> <p>9.2 Outline the various uses of sanctions in social control, e.g. court sentences and punishment, etc.</p>  | <ul style="list-style-type: none"> <li>• Explain the functions of rules and regulations in society as a mechanism for social control and order.</li> <li>• Enumerate the various uses of sanctions in social control, e.g. court sentences and punishment, etc.</li> </ul>   | <p>Books , journals, internet resources</p> | <p>Practical not applicable</p> |  |  |

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** INTRODUCTION TO PSYCHOLOGY

**COURSE CODE:** EHS 104

**CREDIT UNIT:** 2.0

**CONTACT HOURS:** THEORY – 2HOUR/WEEK; PRACTICAL - NIL

**GOAL:** This course is designed to give the student the knowledge of human behaviour in illness.

**GENERAL OBJECTIVES:** On Completion of this course, students should be able to:

1. Understand the meaning of Psychology
2. Understand attitude and behavior and their formation
3. Understand Psychology of different life circumstances
4. Understand psychology in relation to Physiotherapy
5. Understand the roles of physiotherapist assistant
6. Understand the importance of mind and body interaction

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>                                 |  |   |                          |                                   |                             |                  |
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| <b>COURSE:INTRODUCTION TO PSYCHOLOGY</b>   |  |   | Course code: EHS 104     | Credit Unit : 2.0                 | Contact Hour: 2 – 0 - 0     |                  |
| <b>Year: 2</b>   |  | <b>Semester: 1</b>  |                          | <b>Pre-requisite: Nil</b>         |                             |                  |
| <b>GOAL:</b> This course is designed to give the students the knowledge of human behaviour in illness. |  |   |                          |                                   |                             |                  |
| <b>Theoretical Content</b>   |  |   | <b>Practical content</b> |                                   |                             |                  |
| <b>GENERAL OBJECTIVE 1.0:</b> Understand the meaning of psychology                                     |  |   |                          |                                   |                             |                  |
| <b>Wk</b>  | <b>Specific Learning Outcome</b>                             | <b>Teacher’s activities</b>   | <b>Resources</b>         | <b>Specific Learning outcomes</b> | <b>Teacher’s activities</b> | <b>Resources</b> |
|  | 1.1 Define Psychology.                                       | <ul style="list-style-type: none"> <li>Give the definition of psychology.</li> </ul>                      | Books                    |                                   |                             |                  |
|  | 1.2 Explain psychology                                       | <ul style="list-style-type: none"> <li>Explain psychology.</li> </ul>                                     | Journal                  |                                   |                             |                  |
|  | 1.3 Trace the advent of psychology.                          | <ul style="list-style-type: none"> <li>Explain the advent of Psychology</li> </ul>                        | Internet                 |                                   |                             |                  |
|  | 1.4 Explain the various application of psychology in health. | <ul style="list-style-type: none"> <li>Explain the various application of psychology in health</li> </ul> | resources                |                                   |                             |                  |
| <b>GENERAL OBJECTIVE 2.0:</b> Understand attitude and behavior and their formation                     |  |   |                          |                                   |                             |                  |
|  | 2.1 Explain attitude.  | <ul style="list-style-type: none"> <li>Explain attitude.</li> </ul>                                       | Books                    |                                   |                             |                  |
|  | 2.2 Explain perception.                                      | <ul style="list-style-type: none"> <li>Explain perception.</li> </ul>                                     | Journal                  |                                   |                             |                  |

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|  | <p>2.3 Differentiate attitude from perception.</p> <p>2.4 Explain behavior.</p> <p>2.5 Differentiate behavior and attitude.</p> <p>2.6 Explain behavioural changes in changes in healthy and illness conditions.</p> | <ul style="list-style-type: none"> <li>• Differentiate attitude from perception.</li> <li>• Explain behavior.</li> <li>• Differentiate behavior and attitude</li> <li>• Explain behavioural changes in changes in healthy and illness conditions.</li> </ul> | <p>Internet</p> <p>Resources</p> <p>Books</p> <p>Journal</p> <p>Internet resources</p> |   |  |   |
| <b>GENERAL OBJECTIVE 3.0</b> Understand Psychology of different life circumstances |  |  |  |   |  |   |
|  | <p>3.1 Explain Ageing.</p> <p>3.2 Explain how ageing affects patient and the family.</p> <p>3.3 Explain societal view on ageing.</p>   | <ul style="list-style-type: none"> <li>• Explain Ageing.</li> <li>• Explain how ageing affects patient and the family.</li> <li>• Explain societal view on ageing.</li> </ul>  | <p>Books</p> <p>Journal</p> <p>Internet resources</p>                                  | <p>3.2 Exhibit an awareness of the psychology of ageing.</p> <p>3.3 Describe how psychology aspects of ageing can effect old people and the</p> | <ul style="list-style-type: none"> <li>• Ask students to write down their thoughts about what they think about being old, their attitudes and what they would feel if they were old.</li> <li>• Bring an old person into the class and ask him/her to talk about how it feels</li> </ul> | <p>Books</p> <p>Journal</p> <p>Internet resources</p> |

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|  |   |                              |  | <p>people who care for them.</p> <p>3.4 Discuss how to care and look after someone who is old after sharing experiences of someone on the job.</p> <p>3.5 Review original thoughts about ageing after sharing experiences of aged persons and also, the persons caring for the aged.</p> <p>3.6 Discuss if original thoughts about aging have changed positively and negatively and what caused the changes.</p> | <p>to be old in Nigerian society.</p> <ul style="list-style-type: none"> <li>• Bring in someone who cares for an old person and ask them to talk about how they feel about looking after someone who is old.</li> </ul> <p>Ask the students to review their original thoughts about ageing and to discuss if they have changed.</p> |  |
| <b>GENERAL OBJECTIVE 4.0</b> Understand psychology in relation to Physiotherapy  |   |                              |  |  |   |  |
| 4.1 Explain the psychological process associated with dying, death and grieving. | <ul style="list-style-type: none"> <li>• Discuss the psychology associated with death, dying and the grieving process.</li> </ul> | Books<br>Journal<br>Internet | 4.1 Discuss why it is important for physiotherapy assistants to understand the | <ul style="list-style-type: none"> <li>• Ask students to write down their thoughts about what they think about death, dying</li> </ul>   | Books<br>Journal<br>Internet  |  |

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|  | 4.2 Discuss the effect of dying, death and grieving on family              | <ul style="list-style-type: none"> <li>• Discuss how does approaching death affect the patient and the family.</li> <li>• Discuss views of society on death and dying and grieving</li> </ul> | resources                    | <p>psychological processes of dying, death and grieving.</p> <p>4.2 Students with experience of death and grieving to talk about it.</p> <p>4.3 Discuss how the grieving process may affect the living.</p> <p>4.4 Discuss how grieving process may affect physiotherapy assistants.</p> | <p>and the grieving process, their attitudes and what they would feel if they were dying.</p> <ul style="list-style-type: none"> <li>• Ask those students with experience of death and grieving to talk about it.</li> <li>• Consider how the grieving process may affect the living.</li> </ul> <p>Consider how grieving process may affect physiotherapy assistants.</p> | resources                    |
| <b>GENERAL OBJECTIVE 5.0</b> Understand the roles of physiotherapist assistant |  |   |                              |  |  |                              |
|  | 5.1 Explain the physiotherapist Assistant Code of code.                    | <ul style="list-style-type: none"> <li>• Introduce the students to the code of conduct for Nigerian physiotherapy assistants.</li> </ul>  | Books<br>Journal<br>Internet | 5.1 Relate the professional code of conduct to the work of physiotherapy assistants.   | <ul style="list-style-type: none"> <li>• Provide case studies that illustrate ethical issues</li> </ul> <p>Note: There should be one case study for each part of the code of conduct.</p>  | Books<br>Journal<br>Internet |
|  | 5.2 Enumerate the ethical conduct of physiotherapist assistant in relation | <ul style="list-style-type: none"> <li>• Take each part of the code and discuss its meaning in relation to:</li> </ul>  | resources                    | 5.2 Review own values and beliefs against  | <ul style="list-style-type: none"> <li>• Allow students to</li> </ul>  | resources                    |

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|   | <p>to:</p> <ul style="list-style-type: none"> <li>• Confidentially</li> <li>• Privalley</li> <li>• Freedom of choice</li> <li>• Patient consent</li> <li>• Scope of practice</li> <li>• Honesty.</li> <li>• Professional behaviour.</li> </ul> <p>5.3 Enumerate the ethical problems that might face physiotherapy assistants.</p> | <ul style="list-style-type: none"> <li>✓ Confidentiality</li> <li>✓ Privacy</li> <li>✓ Freedom of choice</li> <li>✓ Patient consent</li> <li>✓ Scope of practice</li> <li>✓ Honesty</li> <li>✓ Professional behaviour.</li> </ul> <ul style="list-style-type: none"> <li>• Talk about ethical problems that might face physiotherapy assistants.</li> </ul> |  | <p>the code of conduct.</p>   | <p>discuss each case study in small groups.</p> <ul style="list-style-type: none"> <li>• Allow students to think of other scenarios from within their experiences that would illustrate the ethical dilemmas faced by physiotherapy assistants.</li> <li>• Students to consider if their own values may make it hard, sometimes, to conform to professional behavior.</li> </ul> |  |
| <b>GENERAL OBJECTIVE 6.0</b> Understand the importance of mind and body interaction |  |   |  |   |  |  |
|   | <p>6.1 Exhibit some understanding of the interaction between the mind/thought and the body.</p> <p>6.2 Explain the placebo</p>   | <ul style="list-style-type: none"> <li>• Discuss with students mind body interactions .</li> <li>• Provide information pf the above on placebo.</li> </ul>  | <p>Books</p> <p>Journal</p> <p>Internet</p> <p>resources</p> | <p>6.1 Discuss the importance of knowing about mind/body interactions in physiotherapy.</p> | <ul style="list-style-type: none"> <li>• In small groups give students information on research done into placebos and the results.</li> </ul>  | <p>Books</p> <p>Journal</p> <p>Internet</p> <p>resources</p> |

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|  | effects | <ul style="list-style-type: none"> <li>• Explain Plasbo: <ul style="list-style-type: none"> <li>✓ Characteristics</li> <li>✓ Types of placebo</li> <li>✓ How they work</li> <li>✓ Psychological effects</li> <li>✓ physical effects</li> <li>✓ Overall effectiveness</li> </ul> </li> </ul> |  | <p>6.2 Brainstorm case histories of placebo effects.</p> <p>6.3 Brainstorm on circumstances in own experiences where placebo might work.</p> | <ul style="list-style-type: none"> <li>• Ask students to discuss case histories of placebo effects.</li> <li>• Ask students to think of circumstances in their own experience where placebo might work.</li> <li>• Organize small discussion groups about the underpinning psychology behind placebo.</li> <li>• Organize small discussion group about the relevance of this knowledge to physiotherapy.</li> </ul> |  |
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**USPROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE MODULE:** PROFESSIONAL ETHICS

**COURSE CODE:** EHS 106

**COURSE UNIT:** 1.0

**CREDIT DURATION:** THEORY – 1HOUR/WEEK; PRACTICAL - NIL

**GOAL:**

**GENERAL OBJECTIVES:** At the end of the course the students should be able to:-

- 1.0 Understand the basic principles of Ethics
- 2.0 Know the Characteristics of the professional Ethics
- 3.0 Know how to relate ethics with the Energy Health Science.

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| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |  |  |  |                                   |                      |           |
| <b>Course:</b> Professional Ethics                                       |  | <b>Course Code:</b> 106  | <b>Course Unit:</b> 1.0  | <b>Course Duration:</b> 1 – 0 - 0 |                      |           |
| <b>Year 1</b>  | <b>Semester 2</b>  | <b>Pre-requisite:</b> Nil  |  |                                   |                      |           |
| <b>Goal:</b>   |  |  |  |                                   |                      |           |
| <b>GENERAL OBJECTIVES 1.0:</b> UNDERSTAND THE BASIC PRINCIPLES OF ETHICS |  |  |  |                                   |                      |           |
| <b>THEORETICAL CONTENT</b>   |  |  |  | <b>PRACTICAL CONTENTS</b>         |                      |           |
| Week   | Specific Learning outcomes   | Teacher's activities   | Resources  | Specific Learning outcomes        | Teacher's activities | Resources |
| 1.   | <p>1.1 Define the term Ethics</p> <p>1.2 Explain the dilemmas of ethics.</p> <p style="padding-left: 20px;">a. How to live a good life</p> <p style="padding-left: 20px;">b. our right and responsibilities</p> <p style="padding-left: 20px;">c. the languages of right or wrong</p> <p style="padding-left: 20px;">d. moral decision i.e. what is good or bad?</p> <p>1.3 Outline the concepts of ethics.</p> <p>1.4 Explain the aspects of ethics which are as follows:-</p> <p style="padding-left: 20px;">a. Mata-ethics</p> <p style="padding-left: 20px;">b. Normative ethics</p> | <ul style="list-style-type: none"> <li>• Explain what ethics is.</li> <li>• Illustrate the dilemmas of ethics.</li> <li>• Explain the concepts of ethics.</li> </ul> | <ul style="list-style-type: none"> <li>-Marker board</li> <li>-Marker</li> <li>-lecture note</li> <li>-text books</li> </ul> |                                   |                      |           |

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|  | <p>c. Applied ethics</p> <p>1.5 Explain the uses of Ethics, as follows:-</p> <ol style="list-style-type: none"> <li>a. Provision of moral map</li> <li>b. Can pinpoint a disagreement</li> <li>c. Doesn't give several answers.</li> <li>d. Can give several answers.</li> </ol> <p>1.6 Explain how to relates ethics and people:-</p> <ol style="list-style-type: none"> <li>a. As source of group strength</li> <li>b. Good people as well as good actions</li> <li>c. Searching for the source of right and wrong</li> </ol> <p>1.7 Explain "ISMS"</p> <ol style="list-style-type: none"> <li>a. Moral realism</li> <li>b. Subjectivism</li> <li>c. Emotivism</li> <li>d. Prescriptivism</li> </ol> <p>1.8 Outline where ethics comes from:-</p> <ol style="list-style-type: none"> <li>a. God and religion</li> </ol> | <ul style="list-style-type: none"> <li>• Elaborate on the three aspects of ethics listed in 1.4.</li> <li>• Explain the uses of ethics in listed 1.5.</li> <li>• Describe how to relate ethics and people as listed in 1.6.</li> <li>• Outline the four ethical "ISMS" listed in 1.7.</li> </ul> |  |  |  |  |
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|  | <p>b. Human Conscience and intuition</p> <p>c. A rational moral cost-benefit analysis of actions and their effects</p> <p>d. The example of good human beings</p> <p>e. Politician power.</p> <p>1.9 Explain comprehensively on different God – based ethics which are:-</p> <p>a. Supernaturalism</p> <p>b. Intuitionism</p> <p>c. Consequentialism</p> <p>d. Non-consequentialism</p> <p>e. Virtue ethics</p> <p>f. Situation ethics</p> <p>1.10 Explain the universal moral rules.</p> <p>a. Moral absolutism</p> <p>b. Moral relativism</p> | <ul style="list-style-type: none"> <li>• Explain where ethics comes from as listed in 1.8.</li> <br/> <li>• Elaborate on the different God – based ethics listed in 1.9.</li> <br/> <li>• Elaborate on the different moral rules of ethics listed in 1.10.</li> </ul> |  |  |  |  |
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| <b>GENERAL OBJECTIVES 2.0: KNOW THE CHARACTERISTICS OF THE PROFESSIONAL ETHICS</b>   |  |   |  |  |  |
| 2.1 Enumerate the characteristics of professional ethics e.g.<br>a. the practitioner's is expected to:-<br>- be emotionally, mental and physically fit,<br>- be presentable and hardworking,<br>- have a natural talents towards the treatment of the sick,<br>- dress properly<br>- be sympathetic<br>- take time in handling patients<br>-be punctual<br>- have patience<br>- help the poor and the needy. | • Elaborate on the characteristics of professional ethics listed in 2.1.       | -text books<br>-lecture notes<br>-Marker board<br>-Marker |  |  |  |
| <b>GENERAL OBJECTIVES 3.0: KNOW HOW TO RELATE ETHICS WITH THE ENERGY HEALTH SCIENCE</b>  |  |   |  |  |  |
| 3.1 Explain the common framework used in the analysis of medical ethics as follows:-<br>a. Respect for anatomy<br>b. Beneficence<br>c. Non- malfeasance<br>d. Justice  | • Outline the frameworks used in the analysis of medical ethics listed in 3.1. |   |  |  |  |

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|  | e. Respect for persons<br>f. Truthful and honesty<br><br>3.2 Explain the important of communication on medical ethics. | • Elaborate on the important of communication on medical ethics. |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** ELECTRICITY AND MAGNETISM

**COURSE CODE:** EHS 108

**CREDIT UNIT:** 4.0

**CONTACT HOURS:** THEORY -2 HOURS/WEEK; PRACTICAL – 2 HOURS/WEEK

**GOAL:** This course is designed to enable students to comprehend the basic aspect of Electricity Application as the foundation for healthful living at both individual and community levels.

**GENERAL OBJECTIVES:** On the completion of this course, the student should be able to:

- 1.0 Understand the concept of static electricity.
- 2.0 Understand capacitance and the use of capacitors in direct current (d.c) circuits.
- 3.0 Understand the behavior of moving charges in conductors.
- 4.0 Understand the chemical effects of electric current.

5.0 Understand the concepts of magnetic field.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |   |  |                                       |   |   |                         |
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| COURSE: Electricity and Magnetism  |   | <b>Course Code: EHS 108</b>  |                                       | Course Unit: 4.0  | Contact Hour: 2-0-2   |                         |
| <b>Year: 1</b>   | <b>Semester: 2</b>  |  | <b>Pre-requisite: O Level Physics</b> |   |   |                         |
| GOAL: This course is designed to enable students to comprehend the basic aspect of electricity application as the foundation for healthful living at both individual and community levels. |   |  |                                       |   |   |                         |
| <b>Theoretical Content</b>   |   |  |                                       | <b>Practical Content</b>  |   |                         |
| <b>General Objective 1:</b> Understand the concept of static electricity   |   |  |                                       |   |   |                         |
| <b>Wee k</b>   | <b>Specific Learning Outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b>                      | <b>Specific Learning Outcomes</b>                                   | <b>Teacher's activities</b>   | <b>Resources</b>        |
| 1  | 1.1 Describe the principles of electrostatic shielding.<br>1.2 State Coulomb's law.<br>1.3 Explain the principles of operation of the Van de Graff generator.<br>1.4 State the expression for | <ul style="list-style-type: none"> <li>Solve numerical problems in 1.1 to 1.6 and give assignments.</li> </ul> |                                       | 1.1 Be involved in the Demonstration of the Van de Graff Generator. | <ul style="list-style-type: none"> <li>Demonstrate the action of the Van de Graff Generator.</li> </ul> | Van de Graff generator. |

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|   | <p>Coulomb's force in a medium of permittivity <math>\epsilon</math></p> $F = \frac{q_1 q_2}{4\pi\epsilon r^2}$ <p>1.5 Calculate the resultant force between two or more charges using coulomb's law.</p> <p>1.6 Draw lines of force due to:</p> <p>i) an isolated point charge<br/> ii) two similar charges<br/> iii) two unlike charges.</p>  |  |                      |  |  |  |
| 2 | <p>1.7 Define Electric field intensity.</p> <p>1.8 Calculate field intensity due to a point charge and a dipole.</p> <p>1.9 Explain the terms</p> <ul style="list-style-type: none"> <li>- electrostatic potential,</li> <li>- potential difference, and</li> <li>- electron volt.</li> </ul> <p>1.10 Explain the meaning of potential gradient.</p> <p>1.11 State the relation between electric potential gradient and electric field.</p> | <ul style="list-style-type: none"> <li>• Solve numerical problems in 1.7 to 1.146 and give assignments.</li> </ul> | Classroom resources. |  |  |  |



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|   | <p>1.12 Calculate the force and acceleration of an electron placed in electric fields of known intensities.</p> <p>1.13 Calculate the work done in bringing closer two positively or negatively part charges placed at a distance apart.</p> <p>1.14 Calculate the potential and electric field between any two of three charges placed respectively at the corners of an equilateral triangle of known dimensions.</p> |  |                      |  |  |   |
| <b>General Objective 2.0:</b> Understand capacitance and the use of capacitors in d.c. circuits |   |  |                      |  |  |   |
| 3   | <p><b>Capacitors</b></p> <p>2.1 Explain the meaning of capacitor.</p> <p>2.2 Define capacitance.</p> <p>2.3 Describe the different types of capacitors.</p> <p>2.4 List the uses of the capacitor.</p> <p>2.5 Explain the factors affecting the capacitance</p>   | <ul style="list-style-type: none"> <li>• Solve numerical problems in 2.1 to 2.7 and give assignments.</li> </ul> | Classroom resources. | 2.1 Identify of different types of capacitors. | <ul style="list-style-type: none"> <li>• Show students different types of capacitors.</li> </ul> | Mica, paraffin, waxed, electrolytic, paper, ceramic, variable air capacitors, etc |

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|       | <p>of the parallel plate capacitor (Area, distance and dielectric material).</p> <p>2.6 Define permittivity and relative permittivity (or dielectric constant).</p> <p>2.7 Explain Dielectric strength of a medium.</p>   |  |  |  |   |  |
| 4 – 5 | <p>2.8 Write the expression for the capacitance of a parallel plate capacitor (<math>C = \frac{\epsilon A}{d}</math> where <math>d</math> is the distance between the plates, <math>A</math> is the surface area of the plate and <math>\epsilon</math> is the permittivity of the medium between the plates.</p> <p>2.9 Write the expressions for the equivalent capacitance of series and parallel arrangements of capacitors:<br/> <math>\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}</math> (for series arrangement)<br/> <math>C = C_1 + C_2</math> (for parallel arrangement).</p> <p>2.10 Write an expression for</p> | <p>Lecture</p> <ul style="list-style-type: none"> <li>Solve some simple Numerical problems 2.8 to 2.12 using appropriate expressions.</li> </ul> |  | <p>2.2 Charge a capacitor using a resistor.</p> <p>2.3 Discharge a capacitor using a resistor.</p> <p>2.3 Perform an experiment to compare two capacitances of two capacitors using ballistic galvanometer method.</p> | <ul style="list-style-type: none"> <li>Demonstrate the charging of a capacitor using a resistor.</li> <li>Demonstrate the discharge of a capacitor through a resistor.</li> <li>Demonstrate the ballistic galvanometer method of comparing two capacitances of two capacitors.</li> </ul> | <p>Large capacitor, Large resistor, Micro ammeter, two-way key, source of EMF and wire connectors.</p> <p>Ballistic galvanometer, two electrical switches, source of EMF, two capacitors (one standard capacitor) wire</p> |

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|   | <p>the energy stored in a Capacitor.</p> <p>2.11 Calculate the equivalent values of capacitors placed in (i) series (ii) parallel.</p> <p>2.12 Calculate the energy stored in a capacitor.</p>  |  |                      |   |  | connectors.   |
| <b>General Objective 3.0:</b> Understand the Behaviour of moving charges in dconductors |   |  |                      |   |  |   |
| 6 – 7   | <p><b>Direct Current</b></p> <p>3.1 Explain why metals are good conductors of electricity using a free electron model.</p> <p>3.2 Define potential difference and electromotiveforce (e.m.f.)</p> <p>3.3 State the relationship between current and charge.</p> <p>3.4 Write an expression for drift velocity in metals.</p> <p>3.5 Explain the symbols used in the expression for drift velocity written in 3.4 above.</p> | <p>Lectures</p> <ul style="list-style-type: none"> <li>Solve some numerical problems 3.1 to 3.5 and give assignments.</li> </ul> | Classroom resources. | 3.1 Identify different types of resistors | <ul style="list-style-type: none"> <li>Show students differenttypes of Resistors.</li> </ul> | Standard resistors such as carbon black and wire wound resistors, and Variable resistors such as rheostat and resistance boxes. |
| 8 –   | 3.6 Explain how two   | Lectures.  | Classroom            | 3.2 Determine the                         | •Perform experiment  | Wheat stone   |

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| 11 | <p>resistances in series are used to provide a known fraction of a given potential difference (potential divider arrangement).</p> <p>3.7 Define resistivity and conductivity.</p> <p>3.8 Explain the effect of temperature on the resistance of a wire.</p> <p>3.9 Explain temperature coefficient of resistance.</p> <p>3.10 Define internal resistance of a cell.</p> <p>3.11 Write the expression <math>E = I(R+r)</math> for a complete circuit.</p> <p>3.12 Describe the effect of internal resistance on the current drawn from the cells.</p> <p>3.13 State Kirchoff's first and second laws.</p> <p>3.14 Calculate current and</p> | <ul style="list-style-type: none"> <li>Solve some numerical problems 3.6 to 3.16 and give assignments.</li> </ul> | resources. | <p>temperature coefficient of resistance of a coil.</p> <p>3.3 Construct a meter bridge as a group assignment</p> <p>3.4 Determination of unknown resistances.</p> <p>3.5 Compare values of unknown resistance obtained in 3.4 with that obtained using the meter bridge in the laboratory.</p> <p>3.6 Experiment how to use the potentiometer to calibrate an ammeter.</p> | <p>to determine a temperature coefficient of resistance of a copper coil.</p> <ul style="list-style-type: none"> <li>Group students for assignment on construction of meter bridge.</li> <li>Guide students to do use the constructed bridge to determine the values of unknown resistances and compare with that obtained using the meter bridge in the laboratory.</li> <li>Demonstrate how to use the potentiometer to calibrate an ammeter.</li> </ul> | <p>bridge, accumulator or dry cell, switch, sensitive centre reading galvanometer, standard resistor (5 ohm), Thermometer, boiling tube containing paraffin in which is immersed the copper coil.</p> <p>Constructed meter bridge, the meter bridge in the laboratory, dry cell, key set of standard resistances, unknown resistance, galvanometer.</p> <p>Potentiometer ammeter, standard cell, galvanometer, keys,</p> |
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|  | <p>emf in complete circuits applying Kirchoff's laws.</p> <p>3.15 Write the formula for electric power developed in a resistor.</p> <p>3.16 Explain the principle of operation of the wheat stone bridge.</p> <p>3.16 Explain the principle of the potentiometer.</p> |  |  | <p>3.7 Carry out the following experiments using the potentiometer arrangement.</p> <p>(i). Calibrate an ammeter<br/> (ii) Calibrate a voltmeter<br/> (iii) Compare two Resistors<br/> (iv) Calibrate a thermocouple.</p> <p>3.8 In small groups construct a thermocouple first and then calibrate it appropriately e.g. using a potentiometer</p> | <ul style="list-style-type: none"> <li>• Demonstrate how to use the Potentiometer to do the following under-listed experiments: <ul style="list-style-type: none"> <li>(i) Calibration of an ammeter</li> <li>(ii) Calibration of a voltmeter</li> <li>(iii) Comparison of two resistors.</li> <li>(iv) Calibration of a thermocouple.</li> </ul> </li> <li>• Demonstrate how to construct the thermocouple and calibrate it.</li> <li>• Group students and give assignment on construction of thermocouple followed by its calibration with appropriate instruments.</li> </ul> | <p>accumulator, standard cell, rheostat, dry cell.</p> <p>Potentiometer volt metre standard cell, galvanometer, keys, accumulator, standard cell, rheostat, dry cell.</p> <p>Two accumulators, two keys, potentiometer, rheostat, galvanometer, two resistances (can be unknown and standard resistance respectively). Potentiometer, two resistance boxes (2000 OHM) accumulator, key, galvanometer,</p> |
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|  |   |  |                      |   |   | cadmium standard cell, sand bath, thermometer reading up to 350 degrees centigrade, copper and iron wires, thermocouple.                        |
| <b>General Objective 4.0:</b> Understand the Chemical effect of electric current |   |  |                      |   |   |   |
| 12 – 14  | <p><b>Chemical Effects of Electric Current</b></p> <p>4.1 Explain electrolysis and voltameter.</p> <p>4.2 Define electrodes (Anodes and Cathode).</p> <p>4.3 Explain with examples the term electrolyte.</p> <p>4.4 Explain ionization process in an electrolyte.</p> <p>4.5 Explain the mechanism of electrolytic conduction.</p> <p>4.6 Define electrochemical equivalent and equivalent weight.</p> <p>4.7 State Faraday's laws of</p> | <ul style="list-style-type: none"> <li>Lectures.</li> <li>Solve some simple numerical problems in 4.1 to 4.15 and give assignments.</li> </ul> | Classroom resources. | <p>4.1 Watch teacher's demonstration of electrolysis using Hoffman apparatus and copper voltammeter.</p> <p>4.2 Identify the following cells used in electrolysis:</p> <ul style="list-style-type: none"> <li>- Danielcell,</li> <li>- Leclanchecell (dry and wet)</li> <li>- Lead Accumulator</li> <li>- Nife cell and</li> <li>- Western cell.</li> </ul> | <ul style="list-style-type: none"> <li>Demonstrate electrolysis with Hoffman and copper voltammeter.</li> <li>Identify the following cells used in electrolysis for students' practice: <ul style="list-style-type: none"> <li>- Daniel cell,</li> <li>- Leclanche cell (dry and wet)</li> <li>- Lead Accumulator,</li> <li>- Nife cell and</li> <li>- Western cell.</li> </ul> </li> </ul> | <p>Hoffman apparatus and copper voltammeter.</p> <p>Daniel cell, Laclanche cell (dry and wet) lead Accumulator, Nife cell and western cell.</p> |

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|  | <p>electrolysis.</p> <p>4.8 Describe electrolysis of water using Hoffman Voltammeter.</p> <p>4.9 List the applications of electrolysis e.g. Electroplating.</p> <p>4.10 Describe the construction of the cells in 9.12 above.</p> <p>4.11 Explain charging, discharging and care of the accumulators.</p> <p>4.12 Calculate the e.m.f's of cells from energy consideration given the necessary data.</p> <p>4.13 Calculate the mass of a substance liberated during electrolysis using <math>M=ZIt</math> where <math>m</math> =mass, <math>Z</math> is electrochemical equivalent of the substance; <math>I</math> is current , and <math>t</math> is time.</p> |  |  | <p>4.3 Construct simple cells using locally available materials.</p> <p>4.4 Charge accumulators in the laboratory.</p> | <p>Group students for assignment on construction of simple cells using locally available materials.</p> <ul style="list-style-type: none"> <li>• Demonstrate the charging process of accumulators in the laboratory for the students' observation.</li> </ul> | <p>Charger.</p> |
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|  | <p>4.14 Calculate the back e.m.f. produced in a water voltammeter connected to an accumulator given other necessary data.</p> <p>4.15 Solve problems involving the concept of electrolysis.</p>  |  |                      |  |  |   |
| <b>General Objective 5.0:</b> Understand the concepts of magnetic field. |  |  |                      |  |  |   |
| 15   | <p><b>Magnetism</b></p> <p>5.1 Explain the concept of magnetic field.</p> <p>5.2 Explain the nature of the magnetic field:-<br/> ii) around a bar magnet<br/> iii) around a straight current carrying conductor<br/> iv) a solenoid<br/> v) circular coil<br/> vi) toroid</p> <p>5.3 Explain the principle of operation of the magnetometer.</p> | <ul style="list-style-type: none"> <li>• Explain the concept of magnetic field.</li> <li>• Explain the nature of the magnetic field: -<br/> ii) around a bar magnet<br/> iii) around a straight current carrying conductor<br/> iv) a solenoid<br/> v) circular coil<br/> vi) toroid</li> <li>• Explain the principle of operation of the magnetometer.</li> </ul> | Classroom resources. | <p>5.1 Plot magnetic lines of force for the following:<br/> - Bar magnet,<br/> - Straight current carrying conductor,<br/> - solenoid.</p> <p>5.2 Observe teacher's demonstration the use of magnetometer.</p> | <ul style="list-style-type: none"> <li>• Demonstrate how to plot magnetic lines of force for the following:<br/> - Bar magnet,<br/> - Straight current carrying conductor,<br/> - solenoid.</li> <li>• Demonstrate the use of the magnetometer.</li> </ul> | Bar magnet<br>Solenoid,<br>straight current carrying conductor,<br>Circular coil,<br>iron fillings. |



**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**MODULE:** MAGNETIC ENERGY I

**COURSE CODE:** EHS 110

**PRE-REQUISITE:** NIL

**CREDIT HOURS:** 3.0

**COURSE DURATION:** THEORY – 1HOUR/WEEK; PRACTICAL – 2HOURS/WEEK

**GOAL:**At the end of this course, the students should be able to use magnet to treat various ailments.

**General Objectives:** On completion of this course, the student will be able to:

- 1.0 Understand the classification and uses of magnet.
- 2.0 Understand the principles and action of magnet in treatment of ailments.
- 3.0 Understand human body as a huge magnetic field.
- 4.0 Understand the action of magnet on glands.

| PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE                                       |  |  |   |  |   |                    |
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| MODULE: Magnetic Energy I   |  | Course Code: EHS 110   |   | Credit Unit: 3.0   | Contact Hours: 1- 0 - 2   |                    |
| Year I Semester 2   |  | Pre-requisite: NIL   |   |  |   |                    |
| GOAL: At the end of this course, the students should be able to use magnet to treat various ailments. |  |  |   |  |   |                    |
| THEORETICAL CONTENT   |  |  | PRACTICAL CONTENTS                      |  |   |                    |
| General Objective 1.0: Understand the classification and uses of magnet.                              |  |  |   |  |   |                    |
| Wee k   | Specific Learning Outcome  | Teachers' Activities   | Learning Resources                      | Specific Learning Outcome  | Teachers' Activities  | Learning Resources |
| 1.  | 1.1 Define magnet<br><br>1.2 Classify bar magnet according to their shapes e.g round, star, stick, oval, ring, etc.<br><br>1.3 Classify bar magnet according to their uses e.g:<br>- Industrial magnet<br>- Medical Magnet | <ul style="list-style-type: none"> <li>Define Magnet.</li> <li>Explain the classification of bar magnet according to their shapes e.g. round, star, stick, oval, ring, etc.</li> <li>Explain the classification of bar magnet according to their uses e.g:<br/>               - Industrial magnet<br/>               - Medical Magnet</li> <li>Explain various types of bar magnet e.g.</li> </ul> | Textbooks<br>Lecture note<br>Chalkboard | 1.1 Identify a various types of bar magnet e.g.<br>a. Ferrous<br>b. Ferrite<br><br>1.2 Identify the polarity of a bar magnet.<br><br>1.3 Make comparison on the different characteristics of each type of bar magnet listed in 1.1.<br><br>1.4 Identify the pattern of lines of forces on magnet polarities. | <ul style="list-style-type: none"> <li>Show student various types of bar magnet.</li> <li>Demonstrate the bar magnet arrangement.</li> <li>Demonstrate the different characteristics of each type of bar magnet listed in 1.1.</li> <li>Demonstrate the pattern of lines of forces on magnet polarities.</li> </ul> |                    |

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|  | <p>1.4 List types of bar magnet according to their shapes e.g.</p> <ul style="list-style-type: none"> <li>- Permanent</li> <li>- Ferrite</li> <li>Alnico</li> </ul> <p>1.5 State the uses of each type of bar magnet listed in 1.4.</p> <p>1.6 Distinguish between the various types of bar magnet in 1.4.</p> <p>1.7 Outline the history of use of magnet in treating ailments.</p> <p>1.8 Outline the philosophy of the magnetic energy health.</p> <p>1.9 Outline the principles of magnet icenergy health.</p> <p>1.10 Describe the extraction of magnet from its ore</p> | <ul style="list-style-type: none"> <li>- Permanent</li> <li>- Ferrite Alnico</li> </ul> <ul style="list-style-type: none"> <li>• Explain the uses of each type of bag magnet listed in 1.4.</li> <li>• Explain the differences between various types in bar magnet in 1.4.</li> <li>• Explain the history of the use of magnet in treatment of ailments.</li> <li>• Explain the philosophy and principles of magnetic energy health.</li> <li>• Explain the principles of magnetic energy health.</li> <li>• Explainthe extraction of magnet from its ore.</li> </ul> |  |  |  |  |
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| <b>General Objective 2.0</b> Understand the principle and action of magnet in treatment of ailments |  |   |  |  |   |  |
| 2.  | <p>2.1 Identify magnetic field force pattern and their influences on metals</p> <p>2.1 Describe Earth as a huge in relation to magnetic field.</p> <p>2.2 Describe magnetism as a natural phenomenon on the Earth.</p> | <ul style="list-style-type: none"> <li>• Identify magnetic fieldforce pattern and their influences on metals.</li> <li>• Explain the Earth as huge in relation to magnetic field i.e. <ul style="list-style-type: none"> <li>a) Earth as a polar body</li> <li>b) Earth as a magnetic bar.</li> </ul> </li> <li>• Explain the Natural Earth Magnet phenomenon.</li> </ul> |  | <p>2.1 Design magnet used as medals for the purpose of treatment of ailments</p> <p>2.2 Identify magnetic field force pattern and their influences on metals</p> <p>2.3 Identify the different actions of each types of bar magnet viz.</p> <ul style="list-style-type: none"> <li>- Ferrous</li> <li>- Ferrite</li> </ul> | <ul style="list-style-type: none"> <li>• Demonstrate the procedures on how to design magnet for use as medal treatment of ailments.</li> <li>• Demonstrate magnetic field force pattern and their influence on metals</li> </ul> <p>Demonstrate the different actions of each type of bar magnet namely:</p> <ul style="list-style-type: none"> <li>- Ferrous</li> <li>- Ferrite</li> </ul> |  |
| <b>General Objective 3.0:</b> Understand the human body as a hugh magnetic field                    |  |   |  |  |   |  |

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|  | <p>3.1 Describe human body as automatic magnet machine.</p> <p>3.2 Explain the human body as a collection of cells with polar magnetic fields.</p> <p>3.3 Explain how the Brain and Heart act as the most important of human magnet machines in treating of ailments.</p> <p>3.4 Explain the functions of human brain and heart in the use of magnet for treatment</p> <p>3.5 Describe how human body act as a magnetic field.</p> <p>3.6 Explain how magnet affects body metabolism. in the control of ailments like Diarrhoea, Dysentery and Constipation.</p> | <ul style="list-style-type: none"> <li>• Explain the human body as a collection of magnetic field.</li> <li>• Describe the human brain and heart as organs that are easily influenced by a change in the magnetic influx.</li> <li>• Explain how the Brain and Heart act as the most important of human magnet machines in treating of ailments.</li> <li>• Explain the functions of human brain and heart in the use of magnet for treatment</li> <li>• Explain how human body act as a magnetic field.</li> <li>• Describe the effect of bar magnet on digestive system to</li> </ul> |  | <p>3.1 Use of bar magnet on energy points to treat ill health state such as:</p> <ul style="list-style-type: none"> <li>- Headache</li> <li>- Dizziness</li> <li>- Fatigue</li> <li>- Etc.</li> </ul> <p>3.2 Demonstrate the steps by which magnet can be used to enhance normal metabolism through the affection of energy centers such as;</p> <ul style="list-style-type: none"> <li>- Thyroid point</li> <li>- Pituary</li> <li>- Nerves</li> </ul> <p>3.3 Carryout the procedure for the treatment of metabolic ailment like</p> <ul style="list-style-type: none"> <li>- Constipation</li> <li>- Diahorrea</li> <li>- Dysentery</li> </ul> | <ul style="list-style-type: none"> <li>• Demonstrate the use of bar magnet on energy points to treat ill health state such as: <ul style="list-style-type: none"> <li>- Headache</li> <li>- Dizziness</li> <li>- Fatigue</li> <li>- Etc</li> </ul> </li> <li>• Demonstrate the steps by which magnet can be used to enhance normal metabolism through the affection of energy centers such as; <ul style="list-style-type: none"> <li>- Thyroid point</li> <li>- Pituary</li> <li>- Nerves</li> </ul> </li> <li>• Carryout the procedure for the treatment of metabolic ailment like <ul style="list-style-type: none"> <li>- Constipation</li> <li>- Diahorrea</li> <li>- Dysentery</li> </ul> </li> </ul> | <p>-Bar magnet<br/>- Human body</p> |
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|  | <p>3.7 Enumerate the various theories about biological effect of magnet.</p> <p>3.8 Outline the effects of use of magnet on a human body in the treatment of various ailments.</p>  | <p>control ailments like Diarrhoea, Dysentery and Constipation.</p> <ul style="list-style-type: none"> <li>• Explain the various theories about biological effect of magnet.</li> <li>• Explain the effect of magnet to the human body in the treatment of various ailments.</li> <li>•</li> </ul>                       |  |   |   |   |
| <b>General Objective 4.0:</b> Understand the action of magnet on pituitary glands of a human body. |   |  |  |   |   |   |
| 7.   | <p>4.1 List various techniques of magnet application in treatment of ailments.</p> <p>4.2 Classify various ways of applying bar magnet for treatment of ailments</p> <p>4.3 Describe action of magnet on pituitary gland of a human body in the treatment of ailments</p> | <ul style="list-style-type: none"> <li>• Explain various techniques of magnet application in treatment of ailments.</li> <li>• Explain various ways of applying bar magnet for treatment of ailments.</li> <li>• Explain the action of magnet on pituitary gland of a human body in the treatment of ailments</li> </ul> |  | <p>4.1 Apply bar magnet on the energy points of a human body for treatment of ailments</p> <p>4.2 Identify the action of magnets the pituitary gland of a human body in the treatment of ailments</p> | <ul style="list-style-type: none"> <li>• Demonstrate the use of bar magnet on the energy points of a human body for the treatment of ailments.</li> <li>• Demonstrate the action of magnet on the pituitary gland of a human body in the treatment of ailments</li> </ul> | <p>- Bar Magnet</p> <p>- Human Body</p> |
| 8.   |   |  |  |   |   |   |

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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** PYRAMID ENERGY HEALTH SCIENCE I

**COURSE CODE:** EHS 112

**CREDIT HOURS:** 3.0

**COURSE DURATION:** THEORY – 2HOURS/WEEK; PRACTICAL – 1HOUR/WEEK

**PRE-REQUISITE:** NIL

**GOAL:** This course is designed to enable student use the knowledge and skills of pyramid health sciences to manage various ailments.

**General Objectives:** On completion of this module, the student should be able to:

- 1.0 Understand the sciences of pyramid.
- 2.0 Understand the uses of pyramid in treatment of ailments.
- 3.0 Know the philosophy and principles of pyramid health sciences
- 4.0 Know the importance of pyramid health sciences in management of ailments
- 5.0 Understand capacities of energy from different directions



| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>  |  |  |  |  |   |                                 |
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| <b>Module: Pyramid Energy Health Science I</b>  |  |  | <b>Course Code: EHS 112</b>                          |  | <b>Credit Unit: 3.0</b>   | <b>Contact Hours: 2 – 0 - 1</b> |
| <b>Year I Semester 2</b>  |  |  |  |  |   |                                 |
| <b>GOAL:</b> This course is designed to enable students use the knowledge and skills of pyramid health sciences to manage various ailments. |  |  |  |  |   |                                 |
| <b>COURSE SPECIFICATION:</b>  |  |  | <b>THEORETICAL CONTENT</b>                           |  | <b>PRACTICAL CONTENTS</b>   |                                 |
| <b>GENERAL OBJECTIVE 1.0:</b> Understand the sciences of pyramid  |  |  |  |  |   |                                 |
| <b>Week</b>   | <b>Specific Learning Objectives</b>  | <b>Teachers ' Activities</b>   | <b>Learning Resources</b>                            | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b>       |
| 1   | 1.1 Define the term pyramid.<br>1.2 Outline history of pyramid.<br>1.3 State types of Pyramid e.g.<br>- Ancient Egyptian pyramid<br>- Giza Egyptian pyramid<br>- Bengel Egyptian pyramid<br>- Mgbowo Egyptian pyramid<br>- Australian Egyptian pyramid<br>- Saude Egyptian pyramid | <ul style="list-style-type: none"> <li>• Explain the term pyramid</li> <li>• Trace the history of pyramid in the world and Nigeria.</li> <li>• Explain types of Pyramid e.g.               <ul style="list-style-type: none"> <li>- Ancient Egyptian pyramid</li> <li>- Giza Egyptian pyramid</li> <li>- Bengel Egyptian pyramid</li> <li>- Mgbowo Egyptian pyramid</li> </ul> </li> </ul> | Textbooks<br>Lecture notes<br>Marker<br>Board/Marker | 1.1 Identify the different types of pyramid.<br><br>1.2 Identify the inner side of the pyramid | <ul style="list-style-type: none"> <li>•Guide the student to identify different types of pyramid.</li> <li>•Demonstrate the inner side of the Giza pyramid</li> </ul> | Pyramid                         |

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|  | <p>1.3 Describe the type of pyramid.</p> <p>1.4 Define the inner side of the Giza pyramid</p>  | <ul style="list-style-type: none"> <li>- Australian Egyptian pyramid</li> <li>• Describe the type of pyramid.</li> <li>• Explain the inner side of the Giza Pyramid.</li> </ul>   |  |   |  |  |
| <b>General Objective 2.0:</b> Understand the uses of pyramid in treatment of ailments.     |  |   |  |   |  |  |
| 2 - 3  | <p>2.1 State the uses of pyramid in treatment of ailment.</p> <p>2.2 Identify areas of the body where pyramid can be used.</p> <p>2.3 Outline the advantages and disadvantages of using pyramids for treatment of ailments</p> | <ul style="list-style-type: none"> <li>• Explain the uses of pyramid in treatment.</li> <li>• Explain the areas where pyramid are used.</li> <li>• Explain the advantages and disadvantages of using pyramids for treatment of ailments.</li> </ul> |  | <p>2.1 Identify areas of the body where pyramid can be used.</p> <p>2.2 Demonstrate the uses of pyramid in treatment of ailments.</p>                       | <ul style="list-style-type: none"> <li>• Guide student to identify areas of the body where pyramid can be used.</li> <li>• Demonstrate the uses of pyramid for treatment of ailments.</li> </ul> |  |
| <b>General Objective 3.0:</b> Know the philosophy and principles of pyramid health science |  |   |  |   |  |  |
| 5 - 7  | <p>3.1 Explain the philosophy of pyramid.</p> <p>3.2 State the principles of pyramid.</p> <p>3.3 Outline how the pyramid works.</p> <p>3.4 Define the following terms associated with</p>                                      | <ul style="list-style-type: none"> <li>• Expatiate the philosophy of pyramid</li> <li>• Explain the principles of pyramid.</li> <li>• Explain how the pyramid works.</li> </ul>   |  | <p>3.1 Meditate using the following methods:</p> <p>a. Yantra meditation<br/>b. Tantra meditation<br/>c. Mantra meditation<br/>d. Sri-Yantra meditation</p> | <ul style="list-style-type: none"> <li>• Demonstrate the use of the following meditation methods: -<br/>a. Yantra meditation<br/>b. Tantra meditation<br/>c. Mantra meditation</li> </ul>        |  |

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|   | <p>Pyramid usage methods:</p> <p>a. Yantra meditation<br/>b. Tantra meditation<br/>c. Mantra meditation<br/>d. Sri-Yantra meditation</p> <p>3.5 Differentiate various types of meditation listed above.</p> <p>3.6 Describe the construction of Sri-Yantra</p> | <ul style="list-style-type: none"> <li>• Explain the following terms associated to pyramid usage, viz:<br/>a. Yantra meditation<br/>b. Tantra meditation<br/>c. Mantra meditation<br/>d. Sri-Yantra meditation</li> <li>• Explain the differences in the various types of meditation listed above.</li> <li>• Describe the construction of Sri-Yantra</li> </ul> |                                  | 3.2 Construct Sri-Yantra for the purpose of healing   | <p>d. Sri-Yantra meditation</p> <ul style="list-style-type: none"> <li>• Demonstrate the constructional details of Sri-Yantra</li> </ul>  |  |
| <p><b>General Objective 4.0:</b> Know the importance of pyramid health science in management of ailments.</p> |  |  |                                  |   |   |  |
| 8 - 10  | <p>4.1 Enumerate the importance of pyramid.</p> <p>4.2 Describe the use of pyramid as a projector of universal energy</p> <p>4.3 Define blank energy and pyramid caps</p> <p>4.4 Identify the implication of depletion of Blank Energy</p>                     | <ul style="list-style-type: none"> <li>• Enumerate the importance of pyramid.</li> <li>• Explain the use of pyramid project universal energy.</li> <li>• Explain blank energy and pyramid caps.</li> <li>• Discuss the</li> </ul>  | Textbooks<br>Whiteboard<br>Maker | <p>4.1 Demonstrate the uses of pyramid as a projector of universal energy</p> <p>4.2 Practice how to put on the pyramid cap in the treatment of diseases.</p> | <ul style="list-style-type: none"> <li>• Demonstrate the use of pyramid to project to project universal energy.</li> <li>• Guide student to ensure they put the pyramid cap correctly.</li> </ul> |  |

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|  | <p>4.4 State the roles of pyramid caps in the treatment of diseases.</p> <p>4.5 State precautions to be taken to guard against depletion of Blank Energy</p> <p>4.6 Identify other items associated with the use of pyramid e.g.</p> <p>a. Yantra<br/>b. Mantra<br/>c. Tantra<br/>d. Sri-Yantra</p> | <p>implication of depletion of Blank Energy.</p> <ul style="list-style-type: none"> <li>• Explain the roles of pyramid caps.</li> <li>• Describe precautions to be taken to maintain Blank energy.</li> <li>• Explain the items listed in 4.6 in relation to their association with the use of pyramid.</li> </ul> |  |  |  |  |
| <p><b>General Objective 5.0:</b> Understand capacities of energy from different directions</p> |   |  |  |  |  |  |

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| 10 - 12 | <p>5.1 List different directions adopted to generate power in the treatment of diseases, namely:</p> <ol style="list-style-type: none"> <li>e. Eastern Direction</li> <li>f. Northern Direction</li> <li>g. Western Direction</li> </ol> <p>5.2 Describe energy flow from the various directions listed in 5.1above.</p> <p>5.3 State the advantages of collection of energy for each direction listed in 5.1above.</p> <p>5.4 State the power of each direction listed in 5.1 while using energy for treatment.</p> | <ul style="list-style-type: none"> <li>• Explain different directions adopted to generate power in the treatment of diseases, namely: <ol style="list-style-type: none"> <li>a. Eastern Direction</li> <li>b. Northern Direction</li> <li>c. Western Direction</li> </ol> </li> <li>• Explain energy flow from the various directions listed in 5.1above.</li> <li>• Explain the advantages of energy for each direction listed in 5.1above.</li> <li>• Explain the power of each direction in 5.1 iwhile using energy for treatment.</li> </ul> | Textbooks<br>Whiteboard<br>Maker | <p>5.1 Measure the energy flow from each direction below:</p> <ol style="list-style-type: none"> <li>a. Eastern Direction</li> <li>b. Northern Direction</li> <li>c. Western Direction</li> </ol> <p>5.2 Cut pyramid cap to use energy from different directions,.</p> <p>5.3 Use pyramid grids to generate energy from different directions for treatment.</p> | <ul style="list-style-type: none"> <li>• Demonstrate energy flow from each direction below: <ol style="list-style-type: none"> <li>a. Eastern Direction</li> <li>b. Northern Direction</li> <li>c. Western Direction</li> </ol> </li> <li>• Harness the power of pyramid cut.</li> <li>• Demonstrate the use pyramid grids to generate energy from different directions for treatment.</li> </ul> |  |
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# **NID II SEMESTER 1**

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**MODULE:** BIOCHEMISTRY/BIOCHEMICALSCIENCE II

**COURSE CODE:** EHS 201

**PRE-REQUISITE:** EHS 102

**CREDIT HOURS:** 4

**COURSE DURATION:** Theory – 2Hours/Week ; Practical- 2Hours/ week

**GOAL:** This course is designed to enable students acquire theoretical and practical skills in the use of nutrients for treatment of different conditions

### **General Objectives**

- 1.0 Understand the Structure, Properties and Functions of Proteins
- 2.0 Understand the Classification of Amino Acids and their Structure
- 3.0 Understand the Structure and Behavior of Proteins
- 4.0 Understand the Nature of Enzymes
- 5.0 Understand Vitamins and Minerals found in the living Cell
- 6.0 Understand Amino Acid metabolism
- 7.0 Understand the Classes of RNA
- 8.0 Understand Watson & Crick model of DNA

## 9.0 Understand the Synthesis of Purine& Pyrimidine Ribonucleotide( DE NOVO)



| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  |  |  |  |   |  |   |
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| <b>Course:</b> Biochemistry/ Biochemical Science II   |  |  | <b>Course Unit:</b> EHS201                     | <b>Course Unit:</b> 4.0   | <b>Contact Hour:</b> 2-0-2   |   |
| <b>Goal:</b> This course is designed to enable students acquire theoretical and practical skills in the use of nutrients in treatment of different conditions |  |  |  |   |  |   |
| <b>Theoretical Content</b>  |  |  | <b>Practical Content</b>                       |   |  |   |
| <b>General Objective 1.0:</b> Understand the structure, properties and function of Proteins   |  |  |  |   |  |   |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>  | <b>Teacher's activities</b>  | <b>Resources</b>                               | <b>Specific Learning Outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b>  |
| 1-2   | <p>1.1 Classify proteins as globular or fibrous.</p> <p>1.2 List natural courses of proteins</p> <p>1.3 State the characteristic properties of the classes of protein in 1.1 above.</p> <p>1.4 Explain with examples the roles of different proteins in the functioning of living matter e.g. transport, structural catalytic, regulatory defense, etc.</p> <p>1.5 Define prosthetic group</p> | <p>Describe classes of protein as globular or fibrous</p> <p>Explain natural classes of proteins</p> <p>Describe characteristics of the classes of protein</p> | <p>WhiteBoard</p> <p>-Marker</p> <p>-Books</p> | <p>Identify proteins in the laboratory.</p> <p>Isolate albumin from egg white by size exclusion chromatography</p> <p>Denature the albumin purified above and observe it.</p> | <p>Demonstrate Practical identification of protein precipitation from solution</p> | <p>-Protein sample,:</p> <p>-Millon's reagent</p> <p>-Buret test</p> <p>-Tiles, droppers.</p> <p>- Glassware</p> <p>- Calorimeter</p> <p>- Spectrophotometer,</p> <p>- Water bath</p> |

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|   | <p>as a non-protein moiety of a complex protein.</p> <p>1.6 Describe proteins in terms of their prosthetic groups e.g. hemoproteins, glycoproteins, lipoproteins etc.</p> <p>1.7 Describe the structure of a protein as a chain of amino acids which are chemically linked together by chemical bonds between carboxyl alpha amino groups on amino acids (Co-NH)</p> <p>1.8 Draw the general structural formula for alpha amino.</p> |   |  |   |  |   |
| <b>General Objective 2.0:</b> Understand the Classification of Amino Acids and their structures |  |   |  |   |  |   |
| 3   | <p>2.1 Classify amino acids on the basis of the chemical nature of the side groups.</p> <p>2.2 Describe the hydrolysis of protein to give amino acids as their final product.</p> <p>2.3 Describe, given structural formula of any amino acid</p>  | <p>Describe chemical structure of amino acid.</p> <p>Explain the hydrolysis of protein to yield amino acid as end product</p> <p>As in 2.2 above.</p> |  | Identify amino acid generally and specifically. | Assist student to identify different terminal of Amino acid using Ninhydrin solution or Phynylthio handathio | <ul style="list-style-type: none"> <li>- Amino acid analyzer</li> <li>- Chromatographic tanks</li> <li>- Glass plate</li> <li>- chromatographic coloum</li> </ul> |

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|  | <p>in the correct class as in 5.11 above.</p> <p>2.4 Explain D and L isomers within the amino acids.</p> <p>2.5 Explain the amphotericism of amino acids.</p> <p>2.6 Write equations to show the ionization of a named amino acid in solutions.</p> <p>2.7 Interpret a given titration curve for a given amino acid.</p> <p>2.8 Define the term isoelectric point.</p> <p>2.9 Determine the isoelectric point from a given titration curve.</p> <p>2.10 State the solubility of an</p> | <p>Describe the difference between D and L isomers of amino acid</p> <p>Describe Amphotericism.</p> <p>Show ionization of a named amino acid in solution</p> <p>Explain titration curve of a given amino acid</p> <p>Explain iso electric point and determine its point from a given titration curve</p> <p>Explain solubility of</p> |  |  |  |  |
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|   | <p>amino acid on either side of the isoelectric point.</p> <p>2.11 Explain why proteins are precipitated at their isoelectric points.</p> <p>2.13 Explain the general reactions of amino acids due To:<br/>(a) NH<sub>2</sub> group and<br/>(b) –COOH group.</p> <p>2.14 Describe the specific reactions of amino acids due to the side groups.</p> <p>2.15 Explain that peptides are formed by condensation of amino acids and hydrolysis of proteins.</p> <p>2.16 Write an equation to show the formation of dipeptide.</p> | <p>amino acid in an iso electric point.</p> <p>Describe precipitate of protein at their iso electric point</p> <p>Describe general functional group of amino acid due to their NH<sub>2</sub> and COOH group</p> <p>Explain reaction of amino acid with Ninhydrin</p> |            | <p>Identify Amino acid standards</p> <p>Test samples of Amino acids standards with Ninhydrin.</p> | <p>Guide student o identify Amino acid standards</p> <p>Demonstrate how to test samples of Amino acid standards with Ninhydrin.</p> |                                       |
| <b>General Objective 3.0:</b> Understand the structure and behaviour of Proteins. |   |   |            |   |   |                                       |
| 4   | 3.1 Explain the primary, secondary, tertiary and quaternary structure of  | Describe primary secondary, tertiary and quaternary   | Blackboard | Identify precipitate of protein from solution at its  | Assist students to identify different   | - Amino acid Analyzer,<br>- PH scale, |



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| <b>General Objective 4.0:</b> Understand the nature of enzymes. |   |  |                      |   |  |   |
| 5   | <p><b>Enzymes</b></p> <p>4.1 Define enzymes as proteins specialized to catalyse biological reactions at a rapid rate within a narrow range of temperature and pH.</p> <p>4.2 Define substrate as the substance on which the enzyme acts.</p> <p>4.3 Define active site as that region of the enzyme molecule where substrate transformation occurs.</p> <p>4.4 Explain the distinctive features of enzymes i.e. specificity, high catalytic rate and directive effect.</p> <p>4.5 Classify enzymes as oxidoreductases, Transfeases, Hydrolases, Lyases, isomerases and ligases.</p> | <p>Explain enzymes as a biological catalyst</p> <p>Explain substrate (E+S) – (ES+P)</p> <p>Explain active sites of enzyme</p> <p>Describe six major classes of enzyme in its major sequence given examples for</p> | Blackboard Classroom | Identify the rate of a catalyzed reaction (catalase and H <sub>2</sub> O <sub>2</sub> ) at different concentrations of substrate and at different pH and temperatures | Assist student to identify the proper binding site of Enzyme | <ul style="list-style-type: none"> <li>- Yeast as source of catalase,</li> <li>- Hydrogen peroxide</li> <li>- Burette for measuring gas production</li> <li>- Stop clock</li> <li>- Glassware</li> <li>- etc</li> </ul> |

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| 6  | <p>4.6 Explain the efficiency of enzyme action which is dependent on such factors as: PH, temperature, substrate concentration, ionic environment activators and inhibitors.</p> <p>4.7 Draw profiles to show the effect of PH, temperature and substrate concentration on the rate of enzyme activity</p> <p>4.8 Define the terms optimums pH and optimum temperature.</p> | <p>Describe co-enzyme, co-factors, activators and inhibitors</p> <p>Illustrate profile diagram to show effect of PH, temperature on the rate of enzyme activity</p> <p>Explain the terms optimums pH and optimum temperature.</p> |           | <p>Identify the effect of pH of the velocity of enzyme catalyses reaction. Determine the effect of temperature on the velocity of enzyme catalysed reaction.</p> | <p>Assist student to identify order of enzyme kinetics equation</p> | <p>- Charts of enzyme profile diagram with its kinetics</p>                        |
| <b>General Objective 5.0:</b> Understand vitamins and minerals found in the Living cell. |   |   |           |  |   |  |
| 7-8  | <p><b>Vitamins</b></p> <p>5. 1 Explain the importance of vitamin supplements</p> <p>5. 2 Define vitamins and water soluble vitamins.</p>  | <p>Describe vitamins and the importance as a supplement</p> <p>Explain water and fat soluble vitamins with examples.</p>  | Classroom | <p>Identify of Ascorbic acid using Titration/ colorimetric method.</p>   | <p>Assist students to carry out the required experiment.</p>        | <p>- Ascorbic acid standard,<br/>- Burette,<br/>- Calorimeter and accessories.</p> |

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|   | <p>5. 3 Explain the general functions of water soluble vitamins.</p> <p>5. 4 List the deficiency diseases due to problems of water soluble vitamins.</p> <p>5. 5 Define fat soluble vitamins</p> <p>5. 6 Explain the general functions of fat soluble vitamins.</p> <p>5.7 List types of deficiency diseases of fat soluble vitamins.</p> | <p>Describe with structures the functions of water soluble vitamins</p> <p>Explain deficiency diseases of water and fat soluble vitamins</p> <p>Explain fat soluble vitamins</p> <p>Describe general functions of fat soluble vitamins.</p> <p>Explain the types of deficiency diseases of fat soluble vitamins</p> |           |  |   |                |
| <b>General Objectives 6.0</b> Understanding Amino Acid Metabolism |   |   |           |  |   |                |
| 9   | <p><b>Amino Acid Metabolism</b></p> <p>6.1 Explain the following:</p> <ul style="list-style-type: none"> <li>- Amino acid Biosynthesis</li> <li>- Amino acid metabolism in</li> </ul>   | <p>Explain the biosynthesis of the 20 amino acid</p> <p>Explain how vertebrate obtain</p>   | Classroom | <p>Use chart to identify Biosynthesis of 20 amino acid</p> <p>Identify how vertebrate obtain</p> | <p>Identify synthesis of 20 amino acid</p> <p>Show how vertebrate</p> | Chart Textbook |



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|  | vertebrate  | their amino acid by nutrition   |           | their amino acid by nutrition.                                      | obtain their amino acid   |           |
|  | 6.2 Identify Transamination                         | Describe the transfer of transaminase as it catalyzes the transfer of the amino group       |           | Use chart to identify Transamination and oxidation deamination.     | Guide student to identify Transamination and oxidation deamination. |           |
|  | 6.3 Identify oxidation Deamination.                 | Explain the steps in oxidative deamination  |           | Use chart to identify Urea formation.                               | Assist student to identify how urea is formed                       |           |
|  | 6.4 Explain: Uric acid and Urea                     | Explain Urea formation as complex mode of Ammonia detoxification.                           |           |   |   |           |
|  | 6.5 Describe Urea cycle                             |   |           |   |   |           |
| <b>General Objectives 7.0</b> Understand the classes of RNA. |   |   |           |   |   |           |
| 10-11  | 7.1 List classes of RNA                             | Explain three classes of RNA, namely;   | Classroom | Identify the difference between the classes of RNA in 7.1.          | Assist student to differentiate the classes of RNA .                | Chart     |
|  | 7.2 Describe information of MRNA                    | -mRNA<br>-tRNA<br>- rRNA  |           |   |   | Projector |
|  | 7.3 Explain ribosomes as part of VRNA               | Explain the features of mRNA that make it carry message from the DNA for the synthesis of a |           | Use chart to indicate how information flow from DNA – RNA- Protein. | Use chart to identify flow of information on the genome.            |           |
|  | 7.4 Describe transcription process and translation. |   |           | Use chart to identify   | Use chart to  |           |

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|  | <p>7.5 Explain elongation of the transcript.</p> <p>7.6 Describe termination of transcript.</p>  | <p>polypeptide</p> <p>Describe features of VRNA as a bulk of the cellular RNA</p> <p>Explain the structure of DNA dependent RNA polymerase</p> <p>Explain the overall process of RNA synthesis as it is divided into three:</p> <ul style="list-style-type: none"> <li>- Initiation</li> <li>- Elongation</li> <li>- Termination.</li> </ul> |   | <p>rRNA as a bulk of cellular RNA.</p> <p>Identify structure of DNA dependent RNA polymerase.</p> <p>Identify the chemistry of initiation, elongation and Termination of transcript.</p> | <p>indicate cellular RNA .</p> <p>Use chart to indicate DNA RNA dependent polymerase.</p> <p>Assist student to identify initiation, elongation and termination .</p> |        |
| <b>General Objectives 8.0</b> Understand Watson & crick model of DNA |  |  |   |  |  |        |
| 12   | <p><b>Watson &amp; Crick model of DNA structure</b></p> <p>8.1 Explain modification of A and T and between G and C in DNA.</p> <p>8.2 Describe hydrogen bond as it stabilize the double Helix.</p> | <p>Describe A-T and between G-C in DNA as the first two equalities</p> <p>Explain hydrogen bond in DNA as a factor that account for the stability of</p>   | <p>-Marker Board</p> <p>-Books</p> <p>-Journals</p> | <p>Identify A-T and G-C binding in the DNA.</p> <p>Identify the uses of hydrogen bond in denoting complements A=T and G-C.</p>   | <p>Identify A-T and G-C binding in the DNA.</p> <p>Demonstrate the uses of hydrogen bond in denoting complements A=T and G-C.</p>                                    | Charts |

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|   | 8.3 Explain ZDNA conformation.                                | double helical structure.<br>Describe Watson & Crick use of Z confirmation in ZDNA backbone |           | Identify ZDNA conformation by Watson & Crick.                | Assist student to identify ZDNA conformation by Watson & Crick.     |       |
|   | 8.4 State the differences between A-T DNA and Z conformation  | Explain the difference between A-T DNA and Z conformation                                   |           | Identify the differences between A-T DNA and Z conformation. | Assist student to differentiate between A-T DNA and Z conformation. |       |
| <b>General Objectives 9.0</b> Understand the Synthesis of Purine & Pyrimidine Ribonucleotide(de novo) |   |   |           |  |   |       |
|   | 9.1 Describe the pathway of the synthesis of PRPP.            | Explain the biosynthesis of Purine.   | Classroom | Identify biosynthesis and mechanisms                         | Show different rout in the biosynthetic metabolism                  | Chart |
|   | 9.2 Explain the synthesis of IMP from PRPP.                   | Describe formation of PRPP  |           | Use chart to identify pathways of PRPP                       | Assist student to identify synthesis of PRPP using charts.          |       |
|   | 9.3 Explain synthesis of pyrimidine ribonucleotide (de novo). | Explain the formation of UMP in pyrimidine ribonucleotide (de novo).                        |           | Use chart to identify formation of UMP.                      |   |       |
|   | 9.4 Describe UNP as a precursor of other                      | Explain UMP precursor for other   |           | Use chart to indicate UMP as a precursor for other           | Guide students to indicate UMP formation using                      |       |

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|  | <p>pyrimidine nucleotide.</p> <p>9.5 Explain CTP formed from UTP.</p> <p>9.6 Explain Biosynthesis of DNA.</p> | <p>pyrimidine intermediate.</p> <p>Describe how CTT is formed from UTP.</p> <p>Describe DNA biosynthesis .</p> |  | <p>intermediate.</p> <p>Identify how UTP is formed.</p> <p>Use chart to describe DNA biosynthesis.</p> | <p>charts.</p> <p>Assist students to indicate formation of UTP.</p> <p>Guide student to know DNA biosynthesis.</p> |  |
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**PROGRAMME:** National Innovation Diploma In Energy Health Science  
**COURSE:** ENTREPRENEURSHIP STUDIES  
**CODE:** **EDP 201**  
**DURATION:** **3 HOURS/WEEK** (LECTURE: THEORY: 1 PRACTICAL: 2)  
**CREDIT UNITS:** 2

**Goal:** This course is designed to enable the trainee acquire basic knowledge, skills and mindset (attitude) for successful entrepreneurship.

**GENERAL OBJECTIVES:** On completion of the course, the trainee should be able to:

- 1.0 Understand the concept of Enterprise, Entrepreneurs and Entrepreneurship.
- 2.0 Appreciate the rationale for Entrepreneurship knowledge and skills.
- 3.0 Know entrepreneurs.
- 4.0 Know the requirements for entrepreneurship.
- 5.0 Know sources of business ideas.
- 6.0 Know how to organize an enterprise.
- 7.0 Know how to start small and large scale enterprise.
- 8.0 Know how to operate an enterprise.



| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Science                                   |  |  |  |   |   |                 |
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| <b>COURSE:</b> ENTREPRENEURSHIP STUDIES  |  |  | <b>COURSE CODE:</b> EDP 201  |   | <b>CONTACT HOURS:</b> 2 hours / week  |                 |
| <b>GOAL:</b> The trainee should have acquired basic skills and mindset for successful entrepreneurship.. |  |  |  |   |   |                 |
| <b>Course Specification: Theoretical</b>   |  |  |  | <b>Practical Content</b>  |   |                 |
| <b>General Objective 1.0:</b> Understand the concept of Enterprise,Entrepreneurs and Entrepreneurship.   |  |  |  |   |   |                 |
| <b>We<br/>ek</b>   | <b>Specific Learning<br/>Outcomes</b>  | <b>Teacher's<br/>Activities</b>  | <b>Resource</b>  | <b>Specific Learning<br/>Outcomes</b>   | <b>Teacher's<br/>Activities</b>   | <b>Resource</b> |
|  | <p>1.1 Define an enterprise.</p> <p>1.2 Identify attributes required to engage in an enterprise.</p> <p>1.3 Identify different forms of enterprises and classify them into: private/public, profit/non- profit, formal/informal, individual/common, local/foreign, business/social. small/large, manufacturing/servi</p> | <p>Explain the meaning and scope of enterprises and their classifications.</p> <p>Describe the roles different people play in an enterprise using a related organizational chart.</p> <p>Explain factors affecting choice of any role.</p> | <p>Flip charts, Cardboards, Marker pens, Projectors, Computer , White board, Business games: e.g. Monopoly, Block Building</p> | <p>Explain role played in a simulated enterprise.</p> <p>Identify types of enterprises and skills needed to run them.</p> | <p>Create a simulated enterprise decided by the trainees.</p> <p>Each trainee to select a role he or she wants to play.</p> <p>Each trainee to explain their roles to colleagues.</p> <p>List roles and skills of entrepreneurs in business and compare with those identified</p> |                 |

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|  | <p>ce,consumer/industrial etc.</p> <p>1.4 Identify the various roles people play in enterprises and factors that influence choice of role.</p> <p>1.5 List types of entrepreneurs.</p> <p>1.6 Identify features and characteristics of small enterprises.</p> <p>1.7 Explain strengths and areas where small businesses do well.</p> | <p>Explain types of entrepreneurs: self-employed, opportunistic, inventors, pattern multipliers, economy of scale exploiters, acquirers, Buy-sell Artists, speculators, etc.</p> <p>Explain the characteristics of small enterprises.</p> <p>Describe the strengths and areas where small businesses do well with specific</p> |  | <p>Debate for or against the existence of small businesses in an economy.</p> <p>Identify the contributions of SMEs to national Economy</p> | <p>by the students.</p> <p>Divide the trainees into two groups to debate "Small business are not critical for the country's economic development, as such many should be closed down for the sake of economic growth and competitiveness".</p> |  |
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|   |   | examples.   |  |  |  |  |
| <b>General Objective 2.0:</b> Appreciate the rationale for Entrepreneurship knowledge and skills. |   |   |  |  |  |  |
|   | 2.1 Define Entrepreneur and Entrepreneurship.   | Explain entrepreneur and entrepreneurship.  |  | Analyse a life situations people engage in.  | Group trainees and ask each group to enumerate life situations people may find themselves in.                            |  |
|   | 2.2 Differentiate between entrepreneurship and management.                                      | Explain elements of entrepreneurship – observing the environment and identifying benefits from the environment, gathering physical and psychological tools for accomplishment, implementation, receiving rewards. |  | Analyse a case on the role of entrepreneurship in national development bearing in mind the following:<br>Employment /job creation.<br>Improved standard of living.<br>Increased competition<br>Development of entrepreneurial Spirit /culture.<br>National welfare<br>Provision of skills. | Provide a case study ( as a group work assignment) on how entrepreneurship contributes to national economic development. |  |
|   | 2.3 Explain elements of Entrepreneurship.   |   |  |  |  |  |
|   | 2.4 Identify entrepreneurial resources and group them into economic, human, knowledge and time. |   |  | Evaluate your list with those of your  | Ask students to list employment opportunities from the environment.<br><br>Group them into self or wage                  |  |

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|  |  | <p>Explain entrepreneurial resources.</p> <p>Explain principles/features of entrepreneurship in business:<br/> Open market economy;<br/> Private enterprise;<br/> Exploiting change;<br/> Value addition;<br/> Provision of needed Product/service;<br/> Breaking of new frontiers.;<br/> Application of individual initiatives;<br/> Competition;<br/> Uncertainties;. Seeking opportunities;</p> |  | <p>colleagues.<br/> Add those you did not list.</p> <p>Choose your interest from the list.</p> | <p>employment.<br/> Ask students to list employment opportunities from the environment.</p> <p>Group them into self or wage employment.</p> |  |
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|  |  | <p>Creativity/<br/>Innovation.;<br/>Wealth<br/>Creation.;</p> <p>Explain roles<br/>and rewards<br/>of<br/>entrepreneurshi<br/>p in<br/>business.</p> <p>Explain<br/>entrepreneurial<br/>function in<br/>business:<br/>Finance,<br/>Management<br/>Uncertainty<br/>bearing (i.e.<br/>riskbearing).<br/>Encourage<br/>competition,<br/>Identify gaps in<br/>the market.</p> <p>Explain the<br/>importance<br/>of<br/>entrepreneurshi<br/>p insociety:</p> |  |  |  |  |
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**General Objective 3.0: Know entrepreneurs**

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|  | <p>3.1 Identify reasons for selfemployment.</p> <p>3.2 Assess traits required for entrepreneurship.</p> <p>3.3 Explain the differences between entrepreneurs and businessmen.</p> <p>3.4 Identify entrepreneurial characteristics.</p> <p>3.5 Explain leadership role and leadership qualities required by entrepreneurs.</p> <p>3.6 Explain decision</p> | <p>i. Justify the growing dissatisfaction in paid employment.</p> <p>ii. Explain how to assess entrepreneurial potential.</p> <p>iii. Explain how to identify entrepreneurial characteristics which are important for success in owning and operating a business.</p> <p>iv. Explain theory X and Y and relate it to leadership qualities.</p> | <p>Computer with multimedia</p> | <p>Decide the most important qualities essential for entrepreneurship.</p> <p>Highlight various factors of risk taking from a ring Tossing game.</p> | <p>Administer self assessment test/questionnaire to students to assess their personal characteristics in relation to entrepreneurial characteristics.</p> <p>Advise them on those characteristics they may need to improve.</p> <p>Invite a successful entrepreneur to give a talk. Guide Students to ask questions.</p> <p>Introduce the ring tossing game. Guide students to play the game.</p> | <p>Use of practicing entrepreneur Questionnaire Sets of Rings</p> |
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|  | <p>making and steps of the decision making process.</p> <p>3.7 Analyse a risk situation.</p> <p>3.7 Explain the difference between entrepreneurs and businessmen.</p>                                 | <p>v. Explain using PowerPoint Presentation important leadership traits.</p> <p>vi. Interpret a given decision taken by an enterprise.</p> <p>vii. Explain procedure for analyzing a risk situation.</p> |   | <p>Identify various factors of risk taking.</p>  | <p>Let students identify various factors of risk taking.</p>   |   |
| <b>General Objective 4.0:</b> Know the requirements for entrepreneurship |   |  |   |  |  |   |
|  | <p>4.1 Describe the key competencies required for setting up a successful small business.</p> <p>4.2 Describe the key variables which determine success in setting up a successful small business</p> | <p>i. Explain major competencies required for successful entrepreneurship:<br/>Knowledge , Skills and Traits</p> <p>ii. Explain how they are acquired or developed.</p>                                  | <p>Flip chart/<br/>Board<br/>White Board<br/>Marker pens<br/>Projector<br/>Computer</p> | <p>Identify the requirements of each department in terms of knowledge, skill or traits.</p> <p>Identify the factors for setting up the business under your heading.</p> <p>Present to the class your findings.</p> | <p>Draw an organogram of a chosen business organization/outfit.</p> <p>Guide trainees to study the functions of the various departments and the knowledge and skills required for various positions.</p> | <p>Flip charts,<br/>Cardboard marker pens,<br/>White board,<br/>Computer,<br/>Projector etc.<br/>Practicing Entrepreneur Case studies</p> |

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|  | <p>4.3 State the roles of ethics, morality and integrity in business.</p> <p>4.4 State the relationship between business ethics and business social responsibility.</p> <p>4.5 Explain factors responsible for business failure.</p> <p>4.6 Develop strategy to minimize business failure.</p> <p>4.7 State reasons why and how entrepreneurs make the decision to start and run their own businesses.</p> <p>4.8 List income generating activities you have been or could be</p> | <p>iii Provide examples of the competencies under each of knowledge, skills and traits</p> <p>iv. Explain the following as key success factors in entrepreneurship:<br/>motivation and determination, Idea and market, Ability (MAIR Framework) Business plan Organization and Management.</p> <p>v. Explain ethics, morality and their roles in business.</p> |  | <p>Identify factors responsible for either the success or failure of the business.</p> <p>Examine factors to consider in deciding to start and run a business.</p> <p>Analyse case Studies</p> | <p>Select a small business and divide the class into six (6) groups to identify key success factors in setting up the business under one of the major headings in the MAIR framework.</p> <p>Guide trainees to analyse a case of business success/failure.</p> <p>Give a practical assignment for trainees to list the people they know who have started businesses as a result of the factors presented justifying their choice in each case.</p> |  |
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|  | <p>involved in at home, school or within the community.</p> <p>4.9 Describe your role in the activities listed in 4.8 above.</p> | <p>vi. Explain the relationships between ethics and business social responsibility.</p> <p>vii. Explain factors that can lead to business failure and how to overcome them.</p> <p>viii. Explain with examples how individuals /groups arrive at the decision to start their own business.</p> |  |  |  |  |
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**General Objective 5.0: Know sources of business ideas**

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|  | <p>5.1 Define a business idea.</p> <p>5.2 Identify sources of business ideas.</p> <p>5.3 State the</p> | <p>i. Describe a business idea.</p> <p>ii. Explain sources of business ideas and how to spot</p> | <p>Sample Business Plan/ Sales plan</p> | <p>Perform both the 9 dot and creative square exercises.</p> <p>Connect the 9 dots</p> | <p>Guide students to do the 9 dot exercise.</p> <p>Ask them to</p> | <p>Cardboard or graph paper<br/>Pencil/marker<br/>Ruler<br/>Black//white board<br/>Flip chart.</p> |
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|  | <p>importance of generating business ideas.</p> <p>5.4 Explain the concepts, creativity and innovation required for a good business.</p> <p>5.5 Explain the importance of generating a good business idea.</p> <p>5.6 Describe how to turn a business idea into a viable business opportunity.</p> <p>5.7 State factors to consider in identifying and assessing business opportunities.</p> <p>5.8 State</p> | <p>or generate them:<br/>Hobbies, exhibitions, survey, franchises, mass media, complaints, personal skills exercises, brainstorming.</p> <p>iii. Explain why business ideas should be generated:<br/>to respond to market needs.; changing fashions and requirement;<br/>to stay ahead of competition;<br/>to explain technology;. because of product life cycle.; and to spread risk and allow for</p> |  | <p>by means of 4 straight lines.</p> <p>Implement business plan</p> | <p>connect the 9 dots by means of 4 straight lines.</p> <p>Provide the continuous solution on the Board and explain why the solutions lay outside the square of dots.</p> <p>Guide students to do the creative square exercise.</p> <p>Provide a business plan for discussion by groups on implementation strategies</p> | <p>Sample business/ Plan/Sales plan</p> |
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|  | <p>characteristics of a good business opportunity.</p> | <p>failure.</p> <p>iv. Explain/ differentiate between business idea and opportunity</p> <p>v. Explain how to develop/ transform a business idea into a viable business opportunity.</p> <p>vi. Explain factors to consider in identifying and assessing business opportunities: industry and market; length of window of opportunities; personal ; translate business</p> |  |  |  |  |
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|  |  | <p>opportunity to business plan;. goals/competencies of the entrepreneur; management team; competition.; capital, technology &amp; other resource requirements; environment.; feasibility &amp; business plan.</p> <p>vii. Explain the characteristic of good business opportunity: real demand, return on investment, be competitive, meet objective availability of resources &amp; competencies.</p> |  |  |  |  |
| <b>General Objective 6.0:</b> Know how to organize an enterprise |  |   |  |  |  |  |

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|  | <p>6.1 Define market.</p> <p>6.2 List what entrepreneurs should know about potential customers.</p> <p>6.3 List sources of customer information.</p> <p>6.4 Explain the marketing concept.</p> <p>6.5 Explain market research and marketing strategy.</p> <p>6.6 Explain target marketing.</p> <p>6.7 Explain marketing mix.</p> <p>6.8 State how to evaluate marketing</p> | <p>i. Explain market and what should be known about potential customers.</p> <p>ii. Explain sources of customer information.</p> <p>iii. Analyse the marketing concept.</p> <p>iv. Explain market Research and marketing strategy.</p> <p>v. Describe steps in conducting a market survey.</p> <p>vi. Describe how to develop</p> |  | <p>Carry out simple market survey and market research.</p> <p>Prepare a simple sales plan from the market survey and research conducted.</p> <p>Examine the viability of a typical business based on its location.</p> <p>Given a selected business, analyse its initial financial requirements.</p> <p>Analyse capital requirements for the establishment of any selected existing business. Prepare all necessary</p> | <p>Guide trainees to carry out simple market survey and market research in a typical market.</p> <p>Undertake Field Trips.</p> <p>Demonstrate how to prepare a simple sales plan from the market survey and research conducted.</p> <p>Guide trainees to some selected businesses to find out why they are located there.</p> <p>Select an existing business and analyse its capital requirements for establishment. Guide trainees to prepare necessary</p> | <p>Video camera<br/>Video tapes,<br/><br/>Video machine<br/>Television<br/>Real life Project<br/><br/>Samples of Covering letter<br/>CAC registration documents.<br/>Cash flow projections for 3 years.<br/>Tax clearance for 3 years.<br/><br/>Relevant licenses, permits, authorizations, etc.</p> |
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|  | <p>performance.</p> <p>6.9 Explain how to analyse the feasibility of a product/service.</p> <p>6.10 Outline factors that affect the consumer market with reference to the "5 Ws."</p> <p>6.11 State factors for business location.</p> <p>6.12 Explain the legal forms</p> | <p>a salesplan.</p> <p>vii. Explain target marketing and marketing mix.</p> <p>viii. Evaluate marketing performance.</p> <p>ix. Explain how to analyze product feasibility.</p> <p>x. Explain the "5Ws." (who, what, when, where &amp; why) of a market.</p> <p>xi. Explain, with reference to a chosen business, factors for business location.</p> <p>xii. Explain factors</p> |  | <p>papers and sample application for a loan</p> | <p>documents to file for a loan.</p> |  |
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|  | <p>of business ownership.</p> <p>6.13 Estimate the financial requirements for starting a small business.</p> <p>6.14 Explain "investment capital and working capital".</p> <p>6.15 Examine ways of getting into business.</p> <p>6.16 Examine various sources of capital to start an enterprise.</p> <p>6.17 Describe procedures for obtaining a business loan.</p> <p>6.18 Enumerate factors</p> | <p>considered by bankers in evaluating loan.</p> <p>xiii. Explain criteria for evaluating loan sources: Cost, Risk, Flexibility, Control, Availability, Weighing evaluation criteria.</p> <p>xiii. Explain various ways of entering business: Starting New one, Buying existing business Franchise, etc.</p> <p>xiv. Explain various sources</p> |  |  |  |  |
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|  | <p>to consider by bankers when evaluating a loan applicant.</p> <p>6.19 Analyse criteria for evaluating loan sources.</p> <p>6.20 Explain uses of capital.</p> | <p>of capital to start an enterprise.</p> <p>xv. Explain procedures for and considerations in applying for a business loan e.g:<br/> Type of loan,<br/> Purpose of loan,<br/> Credit worthiness/<br/> Integrity<br/> Capability<br/> Repayment period<br/> Security<br/> Guarantors<br/> Flexibility of project.<br/> Customer status with bank.</p> <p>xvi. Explain considerations</p> |  |  |  |  |
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|   |  | for loan<br><b>evaluation</b><br>by banks.   |  |  |  |   |
| <b>General Objective 7.0:</b> Know how to start an enterprise |  |  |  |  |  |   |
|   | <p>7.1 Identify information required by entrepreneurs.</p> <p>7.2 Identify where to source the required information as an entrepreneur.</p> <p>7.3 List the methods of obtaining assistance and provider of the assistance under each method:</p> <ul style="list-style-type: none"> <li>▪ Personal contacts: <ul style="list-style-type: none"> <li>* entrepreneurs</li> <li>* professionals</li> <li>* customers</li> </ul> </li> <li>▪ Observation: <ul style="list-style-type: none"> <li>* trade exhibitions.</li> </ul> </li> <li>▪ Interviews:</li> </ul> | <p>i. Explain nature, sources and suppliers of information required by potential Entrepreneurs. Marketing Technical ICT Financial Legal.</p> <p>ii. Explain methods of obtaining assistance and providers of such assistance e.g. personal contact, observation, interviews, direct mail, reading,</p> |  | <p>Describe information and assistance required by a potential entrepreneur, sources and nature of assistance to be provided.</p> <p>Identify sources of information and assistance required by potential entrepreneurs.</p> <p>Compile personal data of an entrepreneur.</p> <p>Highlight information gathering methods. Relate the economic,</p> | <p>Invite an entrepreneur / consultant to give a talk on information required to start a business and the sources of the information and how to get it.</p> <p>Divide the trainees into groups and ask each group to write down all the information and assistance required by a potential entrepreneur, sources and nature of assistance to be provided. Guide trainees to analyse a case</p> | <p>Practicing entrepreneur<br/>r<br/>Presentation materials:<br/>Computer Projector<br/>Television<br/>Video recorder<br/>Case films<br/>Case Studies</p> <p>Sample Business Plan</p> |

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| <ul style="list-style-type: none"> <li>* customers</li> <li>* suppliers</li> <li>* competitors.</li> <li>* distributors</li> <li>* ex-employees</li> <li>* agents</li> <li>*</li> <li>experts/practitioner s.</li> <li>▪ Direct mail:</li> <li>▪ reading:</li> <li>* reports</li> <li>▪ media</li> <li>▪ books</li> <li>▪ literature</li> <li>▪ directories</li> <li>▪ government information trade associations.</li> <li>▪ Web/Internet research</li> <li>▪ competitors</li> <li>▪ markets</li> <li>▪ industry information</li> <li>▪ government department.</li> </ul> <p>7.4 Analyse a typical business plan.</p> | <p>web/internet research, etc.</p> <p>iii. Explain a business plan,<br/>-whyit is written,<br/>- when itis written,<br/>- types of business plans,<br/>- whowrites the plan,<br/>- how it is written,<br/>- what is done withit,<br/>- how it looks like,<br/>- its contents,<br/>- how it is organized, etc.</p> <p>iv. Explain how to analyse a typical business plan.</p> <p>v. Explain compliance</p> |  | <p>psychological and sociological reasons forgoing into business.</p> <p>Compare the advantages of the various types ofbusiness with a view tomaking a choice.</p> <p>Identify a good locationfor a proposed business.</p> <p>Identify information forbusiness success.</p> <p>Suggest products/services to sell based on nature/location of business.</p> <p>Identify potential customers.</p> <p>Identify appropriate strategy to ensure customer loyalty.</p> | <p>relating to an existing business involving::</p> <ul style="list-style-type: none"> <li>- Personal data of theentrepreneur.</li> <li>- Information whichassisted decision tostart the business.</li> <li>- Reasons for the decision to go into selfemployment bystarting the business.</li> <li>- Nature and structure of the business.</li> <li>- Why choice of location.</li> <li>- Skills, traits and experiences required to run the business.</li> <li>- To link personal entrepreneurial characteristics to eachbusiness plan.</li> <li>- Products/services provided</li> <li>- Demand level.</li> </ul> |  |
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|  | <p>7.5 Identify the legal requirements to comply with before starting a business.</p> <p>7.6 Calculate total capital requirements for a typical business.</p> <p>7.7 Maintain various types of records and reports kept by a business.</p> <p>7.8 Determine total sales, expenses, working capital etc, for a typical business.</p> <p>7.9 Prepare sales and costs forecasts for a typical business.</p> | <p>requirements of a business to operate within the law.</p> <p>vi. Explain how to calculate total capital requirements for a business.</p> <p>vii. Explain types of records and reports to be kept by a business.</p> <p>viii. Provide list of legal Statutory business agencies: CAC, SON, NAFDAC, State Ministry of Commerce, Local Govt etc. and their roles.</p> <p>ix. Explain how</p> |  | <p>Identify sources of customers for a successful business.</p> <p>Identify trends, features and other opportunities that could lead to growth of business.</p> <p>Identify features that can give a competitive edge in business.</p> <p>Identify promotional strategies to improve product/service environment quality, ambience and appearance.</p> <p>Identify staff requirement. Determine duties of each staff.</p> | <ul style="list-style-type: none"> <li>- Potential customers.</li> <li>- Plan to attract initial customers.</li> <li>- Customer traffic per day.</li> <li>- Market share/size for the business.</li> <li>- Opportunities for growth.</li> <li>- Positive features to overcome competition.</li> <li>- Strategies to promote and attract more customers.</li> <li>- Number of employees required.</li> <li>- Duties of each employee.</li> <li>- Qualifications of the employees.</li> <li>- Organizational chart of the business.</li> <li>- Outside /professional services that may be required to</li> </ul> |  |
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|  | <p>7.10 Prepare forecasted cash flow, income statement, balance sheet for a typical business.</p> <p>7.11 Calculate contribution margin of a business from given sales and cost of stock figures using appropriate formula.</p> <p>7.12 Describe the responsibility of a typical small business to the Community</p> | <p>to determine total sales, expenses, working capital, and total amount for fixed assets, total costs for stocks, labour and overheads.</p> <p>x. Explain how to prepare sales and costs forecast.</p> <p>xi. Explain how to prepare forecasted cash flow, forecasted income statement, balance sheet.</p> <p>xii. Explain how to calculate contribution margin.</p> |  | <p>Identify job titles and qualifications/ experience/skill required for each title.</p> <p>Design a proposed organizational chart.</p> <p>List the equipment/tools/ machines etc required in a selected business.</p> <p>Identify compliance requirement.</p> <p>List all the fixed and current assets required to start a selected business.</p> <p>Determine personal contribution to start a business.</p> <p>Note other sources of funding a</p> | <p>support the business.</p> <ul style="list-style-type: none"> <li>- Equipment/ Facilities available for operation.</li> <li>- Compliance requirements.</li> <li>- Total capital required to start.</li> <li>- Personal capital contribution to finance the business.</li> <li>- Intended borrowed capital.</li> <li>- Support evidence/documentation acquired to borrow required funds.</li> <li>- Records/reports required in running the business.</li> <li>- Monthly/annual total sales.</li> <li>- Expected pre-operation expenses</li> <li>.</li> <li>- Required working</li> </ul> |  |
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|  |  |  | <p>business.</p> <p>Identify supporting evidence / documents such as certificate of proficiency, entrepreneur's awards, reference letters, bank statements, tax returns which may be required to support loan application.</p> <p>List records/reports kept by a business such as cheque book, receipts, petty cash, payroll, purchase vouchers, tax returns, cash flow, income statements, balance sheets, etc.</p> <p>Calculate total sales, expenses, working</p> | <p>capital.</p> <ul style="list-style-type: none"> <li>- Total amount for fixed assets. total cost, stocks, labour, overheads. Sales and costs forecast for the first year.</li> <li>Cash forecast for the first year. (Show forecast cash flow).</li> <li>- Profit forecast for first year. (show forecast in income statement).</li> <li>- Net worth of the business at the end of first year. (Show forecast balance sheet)</li> <li>- Gross Profit contribution margin.</li> <li>- Social responsibility of the business.</li> </ul> <p>Group trainees and guide them to prepare a business</p> |  |
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|  |  |  |  | <p>capital, total amount for fixed assets, total costs for stocks, labour overheads, etc. required for starting a business.</p> <p>Prepare sales and costs forecasts, forecasted cash flow, forecasted income statement, forecasted balance sheet for the end of first year.</p> <p>Calculate gross profit/contribution margin in terms of percentage.</p> <p>Identify areas the business can make contribution to the immediate environment/ community (social responsibility).<br/>Prepare a business plan for a chosen</p> | <p>plan for specific business.</p> <p>The above should be scored as part of continuous Assessment</p> |  |
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|   |   |   |  | business.   |  |  |
| <b>General Objective 8.0:</b> Know how to operate an enterprise |   |   |  |   |  |  |
|   | 8.1 Explain how to select, motivate and discipline staff in a small business.                           | i. Explain personnel practices in a small business.                               |  | Prepare a suitable job advertisement for an existing vacancy in a small business.     | Guide trainees to prepare a suitable job advertisement for a determined vacancy.         | Samples of packaged Products.                              |
|   | 8.2 List necessary skills required by an entrepreneur to manage his personnel in a successful business. | Recruitment and selection. Orientation. Job design, specification and assignment. |  | Schedule daily activities.  | Guide trainees to prepare a time schedule of their activities.                           | Newspaper cuttings of job advertisement                    |
|   | 8.3 Explain why it is necessary to manage time in business.   | Motivation Discipline.  |  | Prepare sales promotion campaign to address a specific problem of sales.              | Ask them to prioritize their activities for the next day.                                | Cash Journals/<br>Cash book                                |
|   | 8.4 Explain techniques of time management.  | ii. Describe skills required to manage people.                                    |  |   | Advise them on best practices.   | Receipt Books<br>Case Studies                              |
|   | 8.5 Describe a salesman and his attributes.   | iii. Explain time management and its techniques.                                  |  | Draw a depreciation schedule after calculating depreciation for some specified items. | Guide trainees to prepare a promotional campaign to address a specific problem of sales. | Samples of Sales and Cost forecast<br>Projected Cash flows |
|   | 8.6 Describe  | iv. Explain   |  | Use relevant computer   | Invite successful  | Projected  |

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|  | <p>characteristics of potential customers.</p> <p>8.7 Describe the steps taken by a sales person in selling a product.</p> <p>8.8 Explain importance of promotional activities in promoting sales.</p> <p>8.9 Describe steps to take in dealing with suppliers.</p> <p>8.10 Explain factors in selecting appropriate technologies for a typical small business considering its characteristics and major considerations.</p> <p>8.11 Analyse a</p> | <p>qualities of successful salesman.</p> <p>v. Explain qualities of potential customers.</p> <p>vi. Explain the role of communication in selling .</p> <p>vii. Explain the role of promotion in sales.</p> <p>viii. Explain steps of doing business with suppliers.</p> <ul style="list-style-type: none"> <li>- Determine your business needs.</li> <li>- Identify potential suppliers.</li> <li>- Contact</li> </ul> |  | <p>package and prepare a cash flow plan.</p> <p>Describe how to open and keep a simple cash book.</p> <p>Prepare a cash flow projection with a suitable computer package.</p> <p>Prepare the following documents:</p> <ul style="list-style-type: none"> <li>- Simple profit &amp; loss account</li> <li>- Balance sheet from given operating results of a business.</li> </ul> | <p>Entrepreneur for experience sharing.</p> <p>Demonstrate how to calculate depreciation and draw a depreciation schedule.</p> <p>Demonstrate how to prepare a cash flow plan and keep simple cash book with a relevant computer package.</p> <p>Demonstrate how to prepare a cash flow projection - using a relevant computer package.</p> <p>Demonstrate how to prepare:</p> <ul style="list-style-type: none"> <li>Simple profit, loss account and</li> <li>Simple balance sheet.</li> </ul> | <p>income statement</p> <p>Balance sheet.</p> <p>Sample of relevant Computer package(s)</p> <p>Computer.</p> |
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|  | <p>decision to introduce new technology in a small business.</p> <p>8.12 Categorize various costs into direct or indirect costs.</p> <p>8.13 Calculate depreciation of selected machineries/ equipment and plot them on a depreciation schedule.</p> <p>8.14 Explain record keeping and types of records kept by small businesses.</p> <p>8.15 Describe a cashflow plan and how to keep a simple cash book.</p> <p>8.16 Prepare a cash</p> | <p>suppliers and obtain quotations.</p> <ul style="list-style-type: none"> <li>- Select best suppliers.</li> <li>- Order goods.</li> <li>- Check received goods.</li> <li>- Check the invoice and Pay suppliers.</li> </ul> <p>ix. Explain how to determine appropriate technologies for use in a small business e.g..</p> <p>Simple Effective, Availability, Flexibility, Durability, Efficiency, Cost effectiveness.</p> <p>x. Explain the</p> |  |  |  |  |
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|  | <p>flowprojection.</p> <p>8.17 Calculate profit or loss of a given business from provided figures.</p> <p>8.18 Prepare a simple profit and loss account and balance sheet from given operational figures</p> | <p>major considerations to make before introducing new technology in a small business.</p> <p>xi. Explain how new technology will improve market share.</p> <ul style="list-style-type: none"> <li>- How the technology will affect business profits.</li> <li>- Whether market study has been conducted to determine the demand for the new product.</li> <li>- Period it will take for the new product to gain acceptance</li> <li>.</li> <li>- Availability of</li> </ul> |  |  |  |  |
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|  |  | <p>personnel, materials and capital to produce and market the new product.</p> <ul style="list-style-type: none"> <li>- Knowledge and experience of the entrepreneur about the new technology</li> <li>- Effectiveness of the new technology on the size and current operation of the business.</li> <li>- Competitors' reaction on the introduction of the new technology</li> </ul> <p>xi. Explain various costs of an enterprise with examples:</p> <ul style="list-style-type: none"> <li>- Staff costs</li> </ul> |  |  |  |  |
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|  |  | <ul style="list-style-type: none"> <li>- Material costs</li> <li>- Other costs</li> <li>- Capital costs.</li> </ul> <p>xii. Explain how to calculate depreciation of specified items of machinery and draw up a depreciation schedule.</p> <p>xiii. Explain recordkeeping and its importance in a small business.</p> <p>xiv. Explain how to establish a record keeping system.</p> <p>xv. Explain types of records a small business should keep.</p> |  |  |  |  |
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|  |  | <p>xvi. Explain who should be responsible for keeping business financial records.</p> <p>xvii. Explain how to make a cash flow plan and keep simplecash book.</p> <p>xviii. Explain how to make a cash flow projection.</p> <p>xix. Explain how to prepare: Simple profit and loss statement and simple balance sheet from given figures</p> |  |  |  |  |
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**INTRODUCTION TO ENTREPRENEURSHIP**  
**LIST OF EQUIPMENT**

1. Flip chart and board 1
2. Cardboard/graph paper 1
3. Marker pen 50
4. Magic board 1
5. Computer 1
6. Multimedia projector 1
7. Projector screen 1
8. Video Tapes
- 9 Video machine 1
10. Television set (21 inches) 1
11. Video camera 1
12. Steel cabinet 1
13. Ring and stand 10 pairs
14. Wooden 20\*20\*20 cubes 20 packs

**PROGRAMME :** National Innovation Diploma In Energy Health Technology

**COURSE :** Descriptive Statistics

**CODE :** STA 111

**DURATION :** 7 HR

**CREDIT UNITS :**

**GOAL :** This course is designed to enable students acquire basic knowledge of descriptive statistics

**GENERAL OBJECTIVES:** On completion of this module, students should be able to:

- 1.0 Understand the nature of statistical data, their types and uses
- 2.0 Understand the procedures for collection of statistical data
- 3.0 Understand the difference between total coverage and partial coverage in data collection
- 4.0 Know the methods for data compilation
- 5.0 Understand the methods of data presentation

| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Science  |   |  |  |  |   |  |
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| <b>COURSE:</b> Descriptive Statistics   |   |  | <b>COURSE CODE:</b> STA 111                  |  | <b>CONTACT HOURS:</b>                               |  |
| <b>GOAL:</b> This course is designed to enable students to acquire a basic knowledge of descriptive statistics. |   |  |  |  |   |  |
| <b>Course Specification: Theoretical</b>  |   |  |  | <b>Practical Content</b>                             |   |  |
| <b>General Objective 1.0:</b> Understand the nature of statistical data, their types and uses                   |   |  |  |  |   |  |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>                 | <b>Teacher's Activities</b>  | <b>Resource</b>                              | <b>Specific Learning Outcomes</b>                    | <b>Teacher's Activities</b>                         | <b>Resource</b>  |
|   | 1.1 Define Data, Statistics                       | Explain the nature of Statistics.  | - Books of recorded statistics<br>- Internet | Locate sources of statistical data.                  | Encourage investigating sources.                    | - Books of recorded statistics<br>- Internet<br>- Text books |
|   | 1.2 Identify various sources of statistical data. | Introduce various sources and discuss how they are used (e.g. social, economic, health, biological, demographic and industrial). | - Books of recorded statistics<br>- Internet | Decide on use of data found.                         | Encourage use of Internet.                          | - Books of recorded statistics<br>- Internet<br>- Textbooks  |
|   | 1.3 State important uses of statistics.           |  |  | Determine scale of measurement for data found.       | Decide on use of data found.                        |  |
|   | 1.4 State uses of statistical data.               | Explain uses of data.  |  | Comment on effectiveness of scale of measurement for | Determine scale of measurement for data found.      |  |
|   |   |  |  |  | Comment on effectiveness of scale of measurement of |  |

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|  | <p>1.3 Explain quantitative data.</p> <p>1.6 Identify various scales of measurement for data found.</p>   | <p>Explain nature of quantitative data.</p> <p>Discuss various scales of measurement for data found (e.g. nominal, interval, ratio and ordinal).</p>                    |                            | data found.   | data found.  |                      |
| <b>General Objective 2.0: Understand the procedures for collection of statistical data</b> |   |   |                            |   |  |                      |
|  | <p>2.1 , Define the following:</p> <ul style="list-style-type: none"> <li>- Samples,</li> <li>- Sampling Techniques</li> <li>- Data Collection.</li> </ul> <p>2.2 Describe basic sampling techniques.</p> <p>2.3 Distinguish between the following methods of data collection</p> | <p>Define Samples, Sampling Techniques and Data Collection.</p> <p>Discuss simple random sampling.</p> <p>Discuss systematic Sampling. Discuss stratified Sampling.</p> | Textbooks<br>Lecture notes | <p>Carry out random sampling using simple data.</p> <p>Go on a field trip to collect data</p> <p>Collect data from various sources listed in 1.2 above.</p> | <p>Discuss simple random sampling.</p> <p>Encourage students to carry out field work to collect data.</p> <p>Guide student to collect data from various sources listed in 1.2 above.</p> | Textbooks<br>Lecture |

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|  | <p>2.4 Design questionnaires and formats for data Collection.</p> <p>2.5 Identify the problems and types of errors that arise in data collection.</p> <p>2.6 Collect data from various sources listed in 1.2 above.</p> <p>2.7 Classify data into primary/secondary data.</p> | <p>Discuss quota sampling.</p> <p>Explain the process of carrying out field work to collect data.</p> <p>Discuss the process of collecting data from various sources listed in 1.2 above</p> <p>Discuss the process of collecting primary and secondary data.</p> | <p>- Textbooks</p> <p>- Field trip</p> <p>- Random number table</p> | <p>Collect primary and secondary data.</p> <p>Classify data into primary/secondary data.</p> | <p>Guide students to collect primary and secondary data.</p> <p>Guide student to classify data into primary/secondary data.</p> | Textbooks  |
| <b>General Objective 3.0:</b> Understand the difference between total coverage and partial coverage in data collection |   |   |   |  |   |            |
|  | <p>3.1 Distinguish between census and sampling surveys.</p>   | <p>Explain the process of undertaking a statistical sample.</p>   | Field trip  | Use examples to illustrate theoretical contents.   | Encourage students to collect statistical sample.   | Field trip |



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|  | 3.2 Explain the meaning of pilot studies.  | Discuss the concepts covered | - Random number table | Collect data applying the sampling methods in 3.7. | Collect data applying the sampling methods in 3.7. | - Field trip<br>- Random number table |
|  | <p>3.3 State the purposes of pilot studies.</p> <p>3.4 Identify the advantages and disadvantages of sampling.</p> <p>3.5 Explain:<br/>- probability<br/>- non- probability<br/>- sampling techniques.</p> <p>3.6 Differentiate between probability and non-probability methods.</p> <p>3.7 Explain the various probability-sampling methods.</p> <p>3.8 Explain the various non-probability sampling</p> |                              |                       |  |  |                                       |

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|  | Method, (purpose, judgement and quota).<br><br>3.9 Explain the use of post enumeration surveys.   |                               |                                       |   |   |                                       |
| <b>General Objective</b> 4.0: Know the methods for data compilation. |   |                               |                                       |   |   |                                       |
|  | 4.1 Define Data compilation.<br><br>4.2 Identify the different categories of collected data.<br><br>4.3 Verify the sorted data.<br><br>4.4 Identify the different data storage methods. | Discuss the concepts covered. | - Statistical kits<br><br>- Textbooks | Categorise various data collected.<br><br>Classify the data into the various categories.<br><br>Sort the data collected.<br><br>Compile of discrete data and continuous data.<br><br>Use examples to illustrate theoretical contents. | Supervise Students' exercises and assess their works. | - Statistical kits<br><br>- Textbooks |

**General Objective 5.0:** Understand the methods of data presentation

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|  | <p>5.1 Define Data presentation.</p> <p>5.2 Explain various methods of data presentation (tabular, graphical, pictorial, text, etc)</p> <p>5.3 Identify the various types of statistical table:<br/>                     - frequency and contingency tables,<br/>                     - simple informative tables,<br/>                     - table for reference,<br/>                     - complex tables.</p> <p>5.4 Explain merits and demerits of chart/diagrams above.</p> | <p>Discuss the concepts covered.</p> | <p>- Textbooks<br/>                     - Statistical Tables<br/>                     - Drawing materials</p> | <p>Show examples of various methods of data presentation.</p> <p>Show examples of charts and tables.</p> <p>Construct scatter diagrams frequency tables and graphs.</p> <p>Present life data.</p> <p>Carryout exercises for assessment.</p> <p>Submit the above exercises for assessment.</p> | <p>Demonstrate, using examples, the various methods of data presentation.</p> <p>Demonstrate by examples, charts and tables.</p> <p>Demonstrate how to construct scatter diagrams frequency tables and graphs.</p> <p>Illustrate how to present life data.</p> <p>Supervisestudents' works.</p> <p>Assess students' Works.</p> | <p>- Textbooks<br/>                     - Statistical Tables<br/>                     - Drawing materials</p> |
|--|---|--------------------------------------|---|---|--|---|

**Recommended Textbooks & References:**

Statistics (6th Edition), W. M. Harper

Introduction to Statistical Method, B. C. Brookes, W. F. L. Dick

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

COURSE TITLE: ASTROLOGY ENERGY MEDICAL SCIENCE I

COURSE CODE: EHS 203

COURSE UNIT: 3.0CU

DURATION: THEORY – 2HOURS/WEEK; PRACTICAL – 1HOUR/WEEK

GOAL: This course is designed to enable the students acquire the knowledge of Astrology and its effects on human life.

GENERAL OBJECTIVES: On completion of this course the students should be able to:-

- 1.0 Understand the basic principles of astrology in medicine.
- 6** Understand the use of astrology to treat various human ailments.
- 7** Understand the significance of zodiac signs in energy health science.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  |   |   |   |                            |                               |                          |
|---|---|---|---|----------------------------|-------------------------------|--------------------------|
| <b>COURSE:</b> Astrology Energy Medical Science (Horoscope)   |   |   | <b>Code:</b> EHS 203  | Course Unit: 3.0           | <b>Contact Hour: 45 Hours</b> |                          |
| <b>Goal:</b> This course is designed to enable students acquire the knowledge of Astrology and its effects on human life. |   |   |   |                            |                               |                          |
| <b>General Objectives 1.0:</b> Understand the basic principles of astrology in medicine.                                  |   |   |   |                            |                               |                          |
| <b>Theoretical Content</b>  |   |   |   | <b>Practical Content</b>   |                               |                          |
| Week  | Specific Learning outcomes  | Teacher's activities  | Resources   | Specific Learning outcomes | Teacher's activities          | Resources                |
| 1.  | 1.1 Define Astrology and medical astrology.<br><br>1.2 State the principles of astrology.<br><br>1.3 State the uses of Astrology in medicine.   | Explain meaning of astrology and its effect on man.<br><br>Explain the principle of astrology.<br><br>Explain the uses of Astrology in medicine.                                | - Pictures<br><br>- Textbooks<br><br>- Marker Board / Markers<br><br>-Charts. |                            |                               | Projector<br>Video Chart |
| <b>General Objectives 2.0:</b> Understand the use of astrology to treat various human ailments                            |   |   |   |                            |                               |                          |
| 2.  | 2.1 Explain sign of grouping.<br><br>2.2 Explain sign of affinities.<br><br>2.3 Differentiate between sign of grouping and affinities.<br><br>2.4 State the importance of sign of grouping. | Explain sign of grouping.<br><br>Explain sign of affinities.<br><br>Explain the different types of affinities and grouping.<br><br>Explain the significant of sign of grouping. | Pictures<br><br>Textbook<br><br>Marker Board<br>Chart                         |                            |                               |                          |

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|  | 2.5 State the importance of sign affinities .                           | Explain the significant of sign of affinities                      |                |  |   |                |
| <b>General Objectives 3.0:</b> Understand the significant of zodiac sign |   |  |                |  |   |                |
| 3.   | 3.1 Define zodiac sign.   | Explain zodiac signs.  | - Pictures     | Draw zodiac chart and its components.                    | Draw zodiac chart and its components.                                       | Pictures       |
|  | 3.2 Describe the significance of zodiac signs.                          | Explain the importance of zodiac sign.                             | - Textbooks    |  |   | - Textbooks    |
|  | 3.3 Explain the Horoscope with zodiac sign.                             | Discuss Horoscope and its components.                              | - Marker Board |  | Describe the procedure of drawing zodiac charts.                            | - Marker Board |
|  | • Define Chart  | Explain Chart.   | - Chart        |  |   | - Chart        |
|  | 3.5 State the importance of chart in Energy medicine.                   | Explain the importance of chart in treating diagnosis.             | - Pictures     | Use Zodiac signs to treat a patient with health problems | Demonstrate how to use Zodiac signs to treat a patient with health problems | - Pictures     |
|  | 4.1 Define Aspect.  | Explain Aspect and its importance.                                 |                |  |   |                |
|  | 3.7 State the importance of Aspect in energy medicine                   |  |                |  |   |                |
|  | 3.8 Define conjunctions in Energy Health Science (EHS).                 | Explain conjunctions in Energy Health Science (EHS).               |                |  |   |                |
|  | 3.9 State the importance of conjunction in Energy Health Science (EHS). | List the importance of conjunction in Energy Health Science (EHS). |                |  |   |                |
|  | 3.10 Define sextile.  | Explain sextile.   |                |  |   |                |
|  | 3.11 State the importance of sextile in EHS.                            | Explain the importance of Sextile in EHS.                          |                |  |   |                |

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| 3.12 Define square in Energy Health Science (EHS).                        | Explain square in Energy Health Science (EHS).                         |  |  |  |  |
| 3.13 State the importance of square in Energy Health Science (EHS).       | Explain the importance square in Energy Health Science (EHS).          |  |  |  |  |
| 3.14 State the importance of trine in Energy Health Science (EHS).        | Explain the importance of trine in Energy Health Science (EHS).        |  |  |  |  |
| 3.15 Define trine in Energy Health Science (EHS).                         | Explain trine in Energy Health Science (EHS).                          |  |  |  |  |
| 3.16 Define opposition in Energy Health Science (EHS).                    | Explain opposition in Energy Health Science (EHS).                     |  |  |  |  |
| 3.17 State the importance of opposition in Energy Health Science (EHS).   | Explain the importance of opposition in Energy Health Science (EHS).   |  |  |  |  |
| 3.18 State the importance of zodiac signs in Energy Health Science (EHS). | Explain the importance of zodiac signs in Energy Health Science (EHS). |  |  |  |  |

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

COURSE: COLOUR ENERGY SCIENCE I

CODE: EHS 205

UNITS: 2.0CU

DURATION: THEORY – 1HOUR/WEEK AND PRACTICAL – 1HOUR/WEEK

**GOAL:** This course is designed to enable the students appreciate colour and apply it in the treatment of diseases.

**GENERAL OBJECTIVES:** On completion of this course the students should be able to:-

1. Understand the concept of colour (chromo) in Energy Health Science
2. Know the properties, content and action of colour.
3. Know how to apply colour in the treatment of diseases.
4. Understand the effects of colour on human body.



| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>  |   |  |  |   |  |   |
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| <b>COURSE: Colour Energy Science I</b>  |   |  | <b>Course Code: EHS 205</b>  | <b>Credit Unit: 2.0</b>   | <b>Contact Hour: 30 Hours</b>  |   |
| <b>GOAL:</b> This course is design to enable the student to appreciate colour and apply it in treatment of diseases |   |  |  |   |  |   |
| <b>General Objectives 1.0:</b> Understand the concept of colour (chromo) in Energy Health Science                   |   |  |  |   |  |   |
| <b>Theoretical Content</b>  |   |  |  | <b>Practical Content</b>  |  |   |
| <b>Week</b>   | <b>Specific Learning outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b>   | <b>Specific Learning outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b>                                      |
|   | 1.1 Define colour.<br>.<br>1.2 Explain light and prism.<br>1.3 Explain diffraction of light.<br>1.4 State the properties of light.<br>1.5 Define colour spectrum.<br>1.6 Explain the significance of colour spectrum .<br>1.7 State the uses of colour spectrum.<br>1.8 Differentiate various colours | <ul style="list-style-type: none"> <li>• Give the definition of colour.</li> <li>• Use prism, diffraction and grating to explain the properties of light.</li> <li>• Explain colour spectrum</li> <li>• Explain the significance of colour spectrum.</li> <li>• Explain the uses of colour spectrum.</li> <li>• Differentiate various</li> </ul> | - Class room<br>- Boards<br>- Charts<br>- Posters<br>- Television<br>- Video machine | 1.1 Identify different colours of various objects.<br>1.2 Observe a colour prism.<br>1.3 Identify different types of colour in a colour prism.<br>1.4 Differentiate various colours of a colour prism.<br>1.5 Identify colour spectrum.<br>1.6 Identify the uses of | <ul style="list-style-type: none"> <li>• Show various objects of different colours to students.</li> <li>• Show student a colour prism</li> <li>• Guide student to identify different colours from a colour prism.</li> <li>• Guide student to differentiate various colours of a colour prism.</li> <li>• Show a colour spectrum.</li> <li>• Illustrate the uses</li> </ul> | -Prism,<br>-Light source<br>-Diffraction<br>- Grating |

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|   | of a colour prism.<br>1.9 Enumerate the uses of the measurement derived from a colour spectrum.   | colours of a colour prism.<br>• Explain the uses of the measurement derived from a colour spectrum.  |  | a colour spectrum<br>1.7 Measure colour spectrum.<br><br>1.8 Identify the uses of the measurement derived from a colour spectrum  | of a colour spectrum.<br>• Demonstrate how to measure a colour spectrum<br><br>• Demonstrate the uses of the measurement derived from a colour spectrum.   |  |
| <b>General Objectives 2.0:</b> Know the properties, content and action of colour. |   |  |  |   |  |  |
|   | 2.4 Outline the properties, content and action of colour.<br>2.5 State the physical properties of colour.<br><br>2.6 State the physical and physiological effects of colour.<br><br>2.7 Describe how to lose or gain weight using colour.<br><br>2.8 Describe the steps involved in the activation of body physiology using colour. | • Explain the properties, content and action of colour<br>• Explain the physical properties of colour<br><br>• Explain the physical and physiological effect of colour.<br><br>• Explain how to lose or gain weight using colour.<br><br>• Describe the steps involved in the activation of body | - Classroom Resources<br><br>- Colour Spectrum | 2.1 Carry out the process of using colour energy to lose and gain weight.<br><br>2.2 Identify the steps of colour spectrum tonation.<br><br>2.4 Categorize the effects of colour tonation to the human body | • Demonstrate the application of colour spectrum on the body to enhance metabolism.<br><br>• Demonstrate the procedure by which colours can be used to activate the body physiology on the energy centers of a human body.<br><br>• Demonstrate the tonation of colour to the energy points of |  |

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|  | <p>2.9 Outline the relationship of the physical properties of colour to human body physiological activities.</p> <p>2.7 State the chemical properties of colour.</p> <p>2.8 Outline the relationship of the chemical properties of colour to human body organs.</p> <p>2.9 Explain the nature of matter on the forty – nine vibrations.</p> | <p>physiology using colour.</p> <ul style="list-style-type: none"> <li>• Relate the physical properties of colour to the human body physiological activities.</li> <li>• Explain the chemical properties of colour.</li> <li>• Relate the chemical properties of colour to the human body organs.</li> <li>• Explain the nature of matter on the forty – nine vibrations.</li> </ul> |   | system.  | <p>a human body system.</p> <ul style="list-style-type: none"> <li>• Demonstrate the effects of colour tonation to the human body system</li> </ul> |   |
| <b>General Objective 3.0:</b> Know how to apply colour in the treatment of diseases. |   |  |   |  |   |   |
|  | <p>7.1 Define drups and colour.</p> <p>7.2 Explain Metabolism with the aid of colour.</p> <p>7.3 Explain Ripe microscope and colour</p>   | <ul style="list-style-type: none"> <li>• Define drups and colour.</li> <li>• Explain Metabolism with the aid of colour.</li> <li>• Explain Ripe microscope and colour and their uses.</li> </ul>   | <p>Classroom</p> <p>Colour Spectrum</p> | <p>3.1 Identify the pattern of tonation on the energy points</p> <p>3.2 Carry out the steps involved in the colour tonation to generate the following colour spectrum:</p> | <p>4 Demonstrate the pattern of tonation on the energy points</p> <p>5 Demonstrate tonation of colour using colour colour projector to</p>          | <p>Colour Projector</p> <p>Colour Filters</p> <p>Power Soirce</p> |

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|  | <p>7.4 Describe the use of colour in the treatment of diseases.</p> <p>7.5 State the applications of Mid-colour of the spectrum (Green colour).</p> <p>7.6 State the applications of cold-colours on the spectrum of the following: Blue, Indigo, Violet, Ultra-violet.</p> | <ul style="list-style-type: none"> <li>• Explain the use of colour in the treatment of diseases.</li> <li>• Explain the following warm colours of the spectrum: Red, Yellow, Orange and their differences.</li> <li>• Explain Mid-colour of the spectrum (Green) and its applications.</li> <li>• Explain cold-colours on the spectrum on the following: Blue, Indigo, Violet, Ultra-violet and their applications.</li> </ul> |  | <ul style="list-style-type: none"> <li>- Warm colour, (red, yellow, orange).</li> <li>- Mid colour (green)</li> <li>- Cold colours (blue, indigo, violet, and ultraviolet).</li> </ul> <p>3.3 Demonstrate various colour spectrum from projector rays to bring out their effects on the human body</p> <ul style="list-style-type: none"> <li>• Characterize the effects of warm colours (Red, Yellow and Orange) on the human body.</li> <li>• Characterize the effects of mid colours (Green) on the human body.</li> <li>• Characterize the effects of cold colours (Blue, Indigo, Violet and</li> </ul> | <p>generate the following:</p> <ul style="list-style-type: none"> <li>- Warm colour, (red, yellow, orange).</li> <li>- Mid colour (green)</li> <li>- Cold colours (blue, indigo, violet, and ultraviolet).</li> </ul> <ul style="list-style-type: none"> <li>• Demonstrate various colour spectrum from projector rays to bring out their effects on the human body.</li> <li>• Characterize the effects of warm colours (Red, Yellow and Orange) on the human body.</li> <li>• Characterize the effects of mid colours (Green) on the human body.</li> <li>• Characterize the effects of cold colours (Blue, Indigo, Violet and Ultra-violet</li> </ul> |  |
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|   |  |  |  | Ultra-violet colours)<br>in the human body. | colours) in the<br>human body. |  |
| <b>General Objective 4.0:</b> Understand the effects of colour on human body. |  |  |  |   |                                |  |

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|  | <p>4.1 List the effects of colour on human body.</p> <p>4.2 Describe each effect of colour on human body listed in 4.1.</p> <p>4.3 Differentiate the following warm colours of the spectrum: Green, Red, Yellow, Orange black, etc on humans.</p> <p>4.4 Explain the effects of spectrum known as Purple, Turquoise, Magenta and Scarlet on human body.</p> <p>4.5 State the characteristics and effects of different spectrums on human body viz-a-viz:</p> <ul style="list-style-type: none"> <li>- Warm colours (red, yellow, orange)</li> <li>- Mid colours (green)</li> <li>- Cold colours (i.e. blue, indigo, violet, ultra violet).</li> <li>-</li> </ul> | <ul style="list-style-type: none"> <li>• Enumerate various effects of colour on human body.</li> <li>• Explain the effects of colour on human body.</li> <li>• Explain the following warm colours of the spectrum: Green, Red, Yellow, Orange, black and their differences.</li> <li>• Explain the effects of spectrum known as Purple, Turquoise, Magenta and Scarlet on human body.</li> <li>• State the characteristics and effects of different spectrums on human body viz-a-viz: <ul style="list-style-type: none"> <li>- Warm colours (red, yellow, orange)</li> <li>- Mid colours (green)</li> <li>- Cold colours (i.e. blue, indigo, violet, ultra violet).</li> </ul> </li> </ul> | <p>Classroom</p> <p>Colour</p> <p>Spectrum and patient on demonstration</p> | <p>4.1 Identify the pattern of tonation on the energy points.</p> | <p>Demonstrate the pattern of tonation on the energy points.</p> |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA (NID) IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** YOGA ENERGY HEALTH SCIENCE I

**COURSE CODE:** EHS 207

**CREDIT UNIT:** 2.0CU

**CONTACT HOURS:** THEORY -1 HOUR; PRACTICAL – 1 HOUR

**GOAL:** This course is designed to enable the students acquire knowledge and skills in Yoga Energy Health for treatment of ailments.

**GENERAL OBJECTIVES:** On completion of this course, the student should be able to:

- 1.0 Understand the principles and concepts of Yoga EnergyHealth.
- 2.0 Know the use of Asanas in Yoga Health for the Activation of Energy points in Human.
- 3.0 Know the practice of Yoga Energy for the enhancement of human health.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH TECHNOLOGY   |  |   |                      |                                   |                                |                  |
|---|--|---|----------------------|-----------------------------------|--------------------------------|------------------|
| <b>COURSE:</b> YOGA ENERGY HEALTH SCIENCE   |  |   | <b>Code:</b> EHS 207 | <b>Credit Unit:</b> 2.0           | <b>Contact Hours:</b> 30 Hours |                  |
| <b>GOAL:</b> At the end of this course, student should have the skill to enable them use it in the treatment  |  |   |                      |                                   |                                |                  |
| <b>General Objectives 1.0:</b> This course is designed to enable the students acquire knowledge and skills in Yoga Energy Health for treatment of ailments. |  |   |                      |                                   |                                |                  |
| <b>Theoretical Content</b>  |  |   |                      | <b>Practical Content</b>          |                                |                  |
| <b>Week</b>   | <b>Specific Learning outcomes</b>  | <b>Teacher's activities</b>   | <b>Resources</b>     | <b>Specific Learning outcomes</b> | <b>Teacher's activities</b>    | <b>Resources</b> |
| 1.  | 1.1 Define Yoga Energy science.<br><br>1.2 Outline the history of Yoga Energy Health.<br><br>1.3 List the types of ailments that can be treated with Yoga:<br>✓ Thyroid gland<br>✓ Headache and diseases<br>✓ Hypertension<br>✓ Asthma and bronchitis<br>✓ Tonsillitis<br>✓ Diarrhea<br>✓ Constipation<br>✓ Peptic ulcer<br>✓ Hepatitics<br>✓ Obesity<br>✓ Diabetes<br>✓ Arthritis | Define Yoga Energy science.<br><br>Explain the history of Yoga Energy Science.<br><br>Explain the importance of Yoga to health.<br><br>Express the rationale for the application of Yoga to Health in management of ailments. |                      |                                   |                                |                  |



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|  | <ul style="list-style-type: none"> <li>✓ Spondylitis</li> <li>✓ Piles (hemorrhoid)</li> <li>✓ Hernia</li> <li>✓ Menstrual abnormalities</li> <li>✓ Eye problems etc</li> </ul> <p>1.4 State the rationale for application of Yoga Energy Health for the management of ailments.</p> <p>1.5 State the advantages and disadvantages of Yoga Energy application.</p> <p>1.6 Explain the process of using Yoga to treat ailments.</p> |  |  |   |  |  |
| <b>GENERAL OBJECTIVE 2.0:</b> Know the use of Asanas in Yoga Health for the Activation of Energy points in Human |   |  |  |   |  |  |
|  | <p>2.1 Explain Asanas in Yoga Energy Health.</p> <p>2.2 Explain the energy points in humans.</p> <p>2.3 Classify types of Yoga Asanas according to their effects on Energy</p>  | <p>Explain Yoga Asanas in relation to Energy point activation</p> <p>Classify the Asanas in 2.3 according to their relative effect on Energy points.</p> <p>Describe the Yoga Asanas based on the classification</p> | <p>Classroom Resource and Energy points on human body area</p> | <p>2.1 Demonstrate the Asanas and their effects to human body.</p> <p>2.2 Demonstrate the touch of energy points in the Body.</p> | <p>Display the steps for students to emulate.</p> <p>Demonstrate the touch of energy points in the Body.</p> |  |

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|  | <p>points.</p> <p>2.3 List the various types of Yoga Asanas based on the classification in 2.3 above.</p> <p>2.4 Explain energy point activation.</p> <p>2.6 Explain the poses of Asanas and their effects on human health.</p>   | <p>on 2.3 above.</p> <p>Explain the various types of Yoga Asanas based on the classification in 2.3 above.</p> <p>Explain energy point activation.</p> <p>Explain the poses of Asanas and their effects on human health.</p>  |  | <p>2.3 Demonstrate the various poses of Asanas Yoga Health.</p>   | <p>Demonstrate the various poses of Asanas Yoga Health.</p> |  |
| GENERAL OBJECTIVES 3.0: Know the use of Asanas in Yoga Health for the Activation of Energy points in Human |   |   |  |   |   |  |
|  | <p>3.1 Describe each Yoga Asanas listed in 2.3.</p> <p>3.2 <u>Padma Asana:</u><br/>Explain the process involved in padma Asana.</p> <p>3.3 <u>Sukha Asana:</u><br/>Describe the steps involved in Sukha Asana.</p> <p>3.4 <u>Uttanpada Asana:</u><br/>Express the process involved in the display of Uttanpada Asana with one leg up.</p> | <p>Describe each Yoga Asanas listed in 2.3.</p> <p><u>Padma Asana:</u><br/>Explain the process involved in padma Asana.</p> <p><u>Sukha Asana:</u><br/>Illustrate the steps involved in Sukha Asana.</p> <p><u>Uttanpada Asana:</u><br/>Express the process involved in the display of Uttanpada Asana with one leg up.</p> |  | <p>3.1 Position human for display of padma Asana</p> <p>3.2 Position human for display of Sukha Asana</p> <p>3.3 Position human for demonstration of uttanda Asana with one leg up, and also, with two legs up.</p> <p>3.4 Demonstrate Pawanmukta</p> |   |  |

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|  | <p>3.5 Explain the health challenges to the following Asana positions:</p> <ul style="list-style-type: none"> <li>•Tara Asanas</li> <li>•Yoga mudra</li> <li>•Ushra Asana</li> <li>•Simha Asana</li> <li>•Savanger Asana with hands up</li> </ul> <p>3.6 Describe how the following can be used in the treatment of eye ailment:</p> <ul style="list-style-type: none"> <li>• Salendhar Bandha Asana.</li> <li>• Bhastrika Psanayana</li> <li>• Shitali Pranayama.</li> </ul> <p>3.7 Display uttanpa Asana with two legs.</p> <p>3.8 List the energy points in the application of panwanmukta Asana.</p> <p>3.9 Explain the process of demonstrating</p> |  |  | <p>Asana position.</p> <p>3.5 Demonstarate Bhujanga position</p> <p>3.6 Demonstrate shatabha Asana with one leg at a time.</p> <p>3.7 Demnonsrate Shatabha Asana with two legs at a time.</p> |  |  |
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|  | <p>pawanmukta Asana.</p> <p>3.10 Describe the steps involved in the expression of Bhujanga Asana</p> <p>3.11 Describe the steps involved in the expression of shatabha Asana with one leg at a time.</p> <p>3.12 Describe the process involved in the expression of shatabha Asana with two legs at a time.</p> <p>3.13 List the steps on the preparation activities of the following Asanas:</p> <ul style="list-style-type: none"> <li>• Tara Asana</li> <li>• Yoga mudra</li> <li>• Ushtra Asana</li> <li>• Veera Asana</li> <li>• Gomukh Asana.</li> </ul> <p>3.14 State the advantages</p> |  |  |  |  |  |
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|  | and disadvantages of<br>Asanas Yoga Energy<br>Health. |  |  |  |  |  |
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**PROGRAMME:**NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:**REIKI ENERGY HEALTH SCIENCE 1

**CODE:**EHS201

**CREDIT HOUR:** 1HR

**CREDIT UNIT:** 2.0

**GOAL:**The course is designed to equip the students, with the theoretical knowledge and practical skillsfor the application of Reiki in the treatment of various ailments.

**GENERAL OBJECTIVE:** On completion of the course, the student should be able to:-

- 1.0 Understand the basic principles of Reiki.
- 2.0 Know the scope of Reiki i.e. chakras, cosmic energy and Aura.
- 3.0 Understand the application of Reiki in the treatment of ailments.

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| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |   |  |   |   |   |                      |              |
| <b>COURSE:</b> Reiki Energy Health I   |   |  | <b>Code:</b> EHS 209  |   | <b>Credit Unit:</b> 2.0   | <b>Contact</b>       | <b>Hour:</b> |
|  |   |  |   |   |   | <b>30 Hours</b>      |              |
| <b>Goal:</b> The course is designed to equip the students, with the theoretical knowledge and practical skills for application of Reiki in the treatment of various ailments |   |  |   |   |   |                      |              |
| <b>GENERAL OBJECTIVES 1.0:</b> Understand the basic principles of reiki  |   |  |   |   |   |                      |              |
| <b>THEORETICAL CONTENT</b>   |   |  |   | <b>PRACTICAL CONTENT</b>  |   |                      |              |
| WEEK   | Specific Learning outcomes  | Teacher's activities   | Resources   | Specific Learning outcomes  | Teacher's activities  | Resources            |              |
| 1.   | 1.1 Define the term Reiki.<br><br>1.2 Outline the History of Reiki.<br><br>1.3 Explain the philosophy and principles of Reiki<br><br>1.4 Define the following terms associated with Reiki:<br>a. Aura<br>b. Chakras<br>c. Cosmic energy<br><br>1.5 Explain the use of | Explain what Reiki is.<br><br>Trace the History of Reiki.<br><br>Identify the philosophy and principle of Reiki.<br><br>Explain the terms associated with Reiki listed in 1.4.<br><br>Explains use of Reiki in Energy Health | -Text books<br>-Lecture note<br>-white marker board/marker. | 1.1 Demonstrate how Reiki works by using hands.<br><br>1.2 Use Reiki in treatment of a patient. | Show how Reiki works using hands.<br><br>Show how to use Reiki in treatment of a patient. | Human being or Dummy |              |

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|   | Reiki in Energy Health Science.<br><br>1.6 Explain the meaning of illness with regards to use of Reiki  | Science.<br><br>Explain illness patterns and the use of Reiki in treating illness.  |  |  |  |                      |
| <b>General Objectives 2.0:</b> Know the scope of Reiki i.e. Chakras, Cosmic Energy & Aura |   |   |  |  |  |                      |
| 1.  | 2.1. Define chakras.<br><br>2.2 Explain Chakras.<br><br>2.3 List the seven major types of chakras.<br><br>2.4. Identify the organs that relate to chakras.<br><br>2.5 Explain the functions of Chakras.<br><br>2.6 Explain how to balance up Chakras<br><br>2.7 Define cosmic energy. | Mention the seven major types of Chakras.<br><br>Differentiate the seven major types of Chakras.<br><br>Identify the organs of the human body that relate to chakras.<br><br>Explain the functions of Chakras.<br><br>Expatiate on how to balance one's Chakras.<br><br>Explain cosmic energy and its | -Text books<br>-Lecture notes<br>-White marker board/ marker | 2.1 Identify the organs of the human body that the chakras relates to.<br><br>2.2 Demonstrate how to balance chakras in a human body.<br><br>2.3 Apply Cosmic Energy in treatment of ailments.<br><br>2.4 Apply Aura in the treatment of ailments. | Show the organs of the human body that chakras relates to.<br><br>Guide the students on how to balance chakras in a human body.<br><br>Demonstrate how to apply Cosmic Energy in treatment of ailments.<br><br>Demonstrate how to apply Aura in the treatment of | Human being or Dummy |



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|  | <p>2.8 State the functions of Cosmic Energy.</p> <p>2.9 Explain the application of Cosmic Energy.</p> <p>2.10 Explain Aura.</p> <p>2.11 Explain List the functions of Aura.</p> <p>2.12 Explain how Aura works.</p> | <p>functions.</p> <p>Explain he applications of Cosmic Energy.</p> <p>Explain Aura.</p> <p>Explain List the functions of Aura.</p> <p>Explain how Aura works.</p> |  |   | <p>ailments.</p>   |                             |
| <b>General Objectives3.0:</b> Understand the application of Reiki in the treatment of ailments |   |   |  |   |  |                             |
|  | <p>3.1 Explain the application of Reiki.</p> <p>3.2 State the rationale for the application of Reiki in the treatment of ailments.</p>  | <p>Explain the application of Reiki.</p> <p>Explain the rationale for the application of Reiki in the treatment of ailments.</p>                                  | <p>- Text books</p> <p>-Lecture notes</p> <p>-White marker board/ marker</p> | <p>Apply Reiki in the treatment of a given ailment.</p> | <p>Demonstrate how to apply Reiki in the treatment of a given ailment.</p> | <p>Human being or Dummy</p> |

PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

COURSE TITLE: SUJOK ENERGY HEALTH

COURSE CODE: EHS 211

CONTACT HOURS: 2HOURS THEORY AND 1HOUR PRACTICAL

CREDIT UNIT: 3CU

**GOAL:** This course is designed to enable students know the methods of using Sujok in the treatment of diseases.

GENERAL OBJECTIVES: On completion of this course, students should be able to:

1. Know the definition, history and principles of Sujok Energy Health.
2. Understand natural postures and the corresponding points of Sujok Energy Health.
3. Know Meridian and its components.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>  |   |  |                                      |  |  |   |
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| <b>COURSE: Sujok Energy Health</b>  |   |  | Course Code: EHS 211                 | Credit Unit: 3.0   | Contact Hours: 2 – 0- 1  |   |
| <b>GOAL:</b> This course is designed to enable students know the methods of using Sujok in the treatment of diseases. |   |  |                                      |  |  |   |
| <b>GENERAL OBJECTIVE 1.0:</b> Know the definition, history and principles of Sujok energy health.                     |   |  |                                      |  |  |   |
| <b>Theoretical Content</b>  |   |  |                                      | <b>Practical content</b>   |  |   |
| <b>Week</b>   | <b>Specific Learning outcomes</b>   | <b>Teacher’s activities</b>  | <b>Resources</b>                     | <b>Specific Learning outcomes</b>  | <b>Teacher’s activities</b>  | <b>Resources</b>                                  |
|   | 1.1 Define Sujok Energy Health.   | Explain the meaning of Sujok Energy Health.                        | - Posters<br>- Textbook/<br>journals | Show the regional parts of the body.   | Identify the regional parts in the body.   | - Posters.<br>- Anatomical model of a human body. |
|   | 1.2 Outline the history of Sujok Energy Health.   | Give the history of Sujok Energy Health.                           | -<br>Markermarke<br>r board          | Demonstrate the corresponding points in the body for application of sujok.                 | Guide students to demonstrate the corresponding points in the body.  | - Charts.<br>- Human body or Dummies.             |
|   | 1.3 Name the regional parts in the body.  | Explain the regional parts in the body.                            | - Charts.                            |  |  |   |
|   | 1.4 Explain the regional parts in the body e.g. Head, Neck, Thorax and Abdomen.                 | Explain the meaning of the regional parts in the body.             |                                      | Identify the corresponding points of hands and feet in the application of Sujok treatment. | Guide the students to identify the corresponding points of hands and feet in the application of Sujok treatment. |   |
|   | 1.5 Identify the corresponding points in human body for the application of Sujok Energy Health. | Identify Sujok points in man.<br><br>Describe sujok points in man. |                                      |  |  |   |
|   | 1.6 Identify the corresponding  | Describe the corresponding .points of                              |                                      |  |  |   |

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|  | <p>points of hands and feet.</p> <p>1.7 Outline the uses of corresponding points of hands and feet in the application of Sujok treatment.</p>  | <p>hands and feet.</p> <p>Explain uses of corresponding points of hands and feet in the application Sujok treatment.</p>  |  |  |  |  |
| <b>General Objectives 2.0 Understand the Natural postures and the corresponding points of Sujok Energy Health.</b> |  |   |  |  |  |  |
|  | <p>2.1 Define postures.</p> <p>2.2 List the natural postures in the human body.</p> <p>2.3 List the benefits of postures.</p> <p>2.4 Describe corresponding points in a human body.</p> <p>2.5 Describe the representation of head in the thumb.</p> <p>2.6 Explain the number of Sujok Energy Health at a given time.</p> <p>2.7 Describe the duration of the each application of Sujok</p> | <p>Explain postures.</p> <p>Explain the natural postures in the human body.</p> <p>Explain the benefits of postures.</p> <p>Explain the meaning of corresponding points in a human body.</p> <p>Explain how the head can be represented in the thumb.</p> <p>Explain number of time the Sujok Energy can be applied at once.</p> <p>Explain the duration of each application of Sujok</p> | <p>Posters.</p> <p>Textbook/journals</p> <p>Marker/marker board.</p> <p>Chart.</p> | <p>2.1 Demonstrate how to represent a human head in a thumb.</p> <p>2.2 Illustrate natural postures in human body.</p> <p>2.3 Illustrate corresponding points in a human body.</p> <p>2.4 Demonstrate the period of time in which Sujok Energy Health can be applied during treatment.</p> | <p>Demonstrates how a human head can be represented in the thumb.</p> <p>Guide students to illustrate natural postures in the human body.</p> <p>Demonstrate corresponding points in the human body.</p> <p>Demonstrate the period of time which Sujok Energy Health can be applied.</p> | <p>Posters.</p> <p>Charts.</p> <p>Skeleton.</p> <p>Anatomical model of human body.</p> |

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|   | <p>2.8 Energy Health. State the precautionary measures to be taken during the application of Sujok Energy Health.</p>   | <p>Energy Health. Explain precautions to be observed during Sujok Energy Health treatment.</p>   |   | <p>2.5 Observe the precautionary measures in the application of Sujok Energy Health treatment.</p> <p>2.6 Apply Sujok Energy Health in treatment of an ailment.</p>                                   | <p>Guide the students to observe the positive precautionary measures to be taken during Sujok applications.</p> <p>Demonstrate how to apply Sujok Energy Health in treatment of a given ailment.</p>                                 |  |
| <b>General Objectives</b> 3.0 Know Meridian and its components. |   |  |   |   |  |  |
|   | <p>3.1 Define Meridian.</p> <p>3.2 Explain components of Meridian.</p> <p>3.3 Describe the selecting techniques of meridian in the human body.</p> <p>3.4 Explain the effects of selecting accurate one point in a body for treatment.</p> <p>3.5 State the direction of Energy</p> | <p>Explain the term meridian.</p> <p>Explain the components of Meridian.</p> <p>Explain the techniques of selecting meridian in a human body.</p> <p>Explain the effect of selecting accurate one point in a body for treatment.</p> <p>Explain the direction of</p> | <p>- Posters.</p> <p>- Textbook/ Journals</p> <p>- Marker Board /marker.</p> <p>- Charts.</p> | <p>3.1 Select meridian in a human body probing using fingers and electronic probing machine.</p> <p>3.2 Point direction of Energy flow in the body.</p> <p>3.3 Select points for Sujok treatment.</p> | <p>Demonstrate the selection of meridian in a human body by probing using fingers and electronic probing machine.</p> <p>Demonstrate the direction of Energy flow in the body.</p> <p>Demonstrate the selection of one point for</p> | <p>- Posters.</p> <p>- Textbook/ Journals</p> <p>- Anatomical model human body.</p> <p>- Charts.</p> |

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|  | <p>flow in the body.</p> <p>3.6 State the advantages of selecting accurate one point (Meridian) for treatment.</p> | <p>Energy flow in the body.</p> <p>Outline the advantages of selecting accurate one point (Meridian) for treatment.</p> |  |  | <p>treatment.</p> |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**MODULE:** MAGNETIC ENERGY II

**COURSE CODE:** EHS 213

**CREDIT HOURS:** 2.0CU

**CONTACT HOURS:** THEORY – 1HOUR/WEEK; PRACTICAL – 1HOUR/WEEK

**PRE-REQUISITE:** MAGNETIC ENERGY 1 (EHS 110)

**GOAL:** This course is designed to enable students acquire theoretical and practical skills to use magnet for treatment of various diseases.

**General Objectives:** On Completion of this course, students should be able to:

- 1.0. Understand the concept of magnet.
- 2.0. Know the morphology and shapes of magnet.
- 3.0. Understand the order of polarity of magnet.
- 4.0. Know the uses of magnet and its management

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>  |  |   |                                   |  |   |   |
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| <b>MODULE: Magnetic Energy II</b>   |  | <b>Course Code: EHS 213</b>   |                                   | <b>Credit Unit: 2.0</b>  |   | <b>Contact Hours: 30 Hours</b>  |
| <b>GOAL: This course is designed to enable student acquire theoretical and practical skills to use magnet for treatment of various diseases</b> |  |   |                                   |  |   |   |
| <b>COURSE SPECIFICATION: THEORETICAL CONTENT</b>  |  |   |                                   | <b>PRACTICAL CONTENTS</b>  |   |   |
| General Objective 1.0: Understand the concept of magnet.  |  |   |                                   |  |   |   |
| <b>Week</b>   | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b>         | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b>   |
| 1.  | 1.1 Define Magnets.<br>1.2 List the various composition of magnet.<br>1.3 Explain the biological effects of components of a magnet<br>1.4 Distinguish between types of magnet based on their application, namely:<br>a. Industrial | <ul style="list-style-type: none"> <li>• Explain the composition of magnet.</li> <li>• Explain the biological effect of components of a magnet.</li> <li>• Explain the differences between Industrial magnet and</li> </ul> | - Classroom Resources<br>- Magnet | 1.1 Identify the composition of magnet.<br><br>1.2 Differentiate between industrial magnet and medical magnet. | <ul style="list-style-type: none"> <li>• Guide student to identify the composition of magnet.</li> <li>• Demonstrate the differences between industrial magnet and medical magnet.</li> </ul> | Various types of magnet e.g.<br>- Industrial magnet<br>- Medical magnet<br>- Permanent magnet<br>- Electro magnet<br>- Ferrite magnet |



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|   | magnet.<br>b. Medical magnet<br>1.5 State the uses of the following types of magnets:<br>a. Permanent magnet<br>b. Electromagnet,<br>c. Ferrite magnet  | medical magnet.<br><ul style="list-style-type: none"> <li>Identify the various uses of the various types of magnet:<br/>           a. Permanent magnet<br/>           b. Electro magnet, and<br/>           c. Ferrite magnet</li> </ul>                   |  | 1.3 Demonstrate the usage of various types of magnet, i.e:<br>a. Permanent magnet<br>b. Electro magnet, and<br>c. Ferrite magnet | <ul style="list-style-type: none"> <li>Demonstrate the various uses of the various types of magnet:<br/>           a. Permanent magnet,<br/>           b. Electro magnet, and<br/>           c. Ferrite magnet</li> </ul>   |  |
| <b>General Objective 2.0: Know the morphology and shapes of magnet.</b> |   |  |  |  |   |  |
| 2.  | 2.1 Identify various shapes of magnets e.g.<br>e.g.<br>- Star shape<br>- Rectangular shape<br>- Round shape<br>- Oval shape<br>- Square shape<br>- Etc. | <ul style="list-style-type: none"> <li>Explain shapes of magnet e.g.<br/>           - Star shape<br/>           - Rectangular shape<br/>           - Round shape<br/>           - Oval shape<br/>           - Square shape<br/>           - etc</li> </ul> |  | 2.1 Draw the various shapes of magnet that are been used.<br><br>2.2 Sort various  | <ul style="list-style-type: none"> <li>Draw various shapes of magnet e.g.<br/>           - Star shape<br/>           - Rectangular shape<br/>           - Round shape<br/>           - Oval shape<br/>           - Square shape, etc.</li> <li>Demonstrate</li> </ul> |  |

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|  | <p>2.2 Classify Magnets according to:</p> <p>a. Sizes (i.e. Big and Small magnets).</p> <p>b. Designs (i.e. Ceramic magnets)</p> <p>2.3 List various sizes of magnet.</p> <p>2.4 Explain Ceramic Magnets.</p> <p>2.5 Describe the methods of designing ceramic magnet.</p> <p>2.6 List the advantages and disadvantages of ceramic magnet.</p> | <ul style="list-style-type: none"> <li>• Classify bar magnet according to sizes, such as: <ul style="list-style-type: none"> <li>- Big magnet</li> <li>- Small magnet.</li> <li>-</li> </ul> </li> <li>• Classify magnet according to designs such as: <ul style="list-style-type: none"> <li>- Ceramic magnet</li> </ul> </li> <li>• Describe Ceramic Magnet.</li> <li>• Describe the methods of designing ceramic magnet.</li> <li>• Explain the advantages and disadvantages of ceramic magnet.</li> </ul> |  | <p>classes of bar magnet according to sizes, such as:</p> <ul style="list-style-type: none"> <li>- Big magnet</li> <li>- Small magnet</li> </ul> <p>2.3 Carry out formation of ceramics using magnetic properties.</p> | <p>how to sort magnet according to sizes, e.g. :</p> <ul style="list-style-type: none"> <li>- Big magnet</li> <li>- Small magnet</li> </ul> <ul style="list-style-type: none"> <li>• Demonstrate the formation of ceramics using magnetic properties.</li> </ul> |  |
| General Objective 3.0: Understand the order of polarity of magnet. |  |   |  |  |  |  |
| 4.   | 3.1 Explain polarity of Magnets.   | <ul style="list-style-type: none"> <li>• Explain the terms; Magnet and Magnetism.</li> </ul>  |  | 3.1 Identify the polarity of bar magnet, i.e.  | <ul style="list-style-type: none"> <li>• Demonstrate how to identify the polarity of a</li> </ul>  |  |

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|   | <p>3.2 Explain the phenomenon of Magnet and Magnetism.</p> <p>3.3 Identify the polarity of bar magnet, i.e.<br/> - North pole<br/> - South pole.</p> <p>3.4 Explain the methods by which bar magnet can be used to treat various ailments.</p> | <ul style="list-style-type: none"> <li>• Describe the ways of identifying poles of magnet i.e. North pole and South pole.</li> <li>• Describe how one can use magnets to treat ailments.</li> </ul> |  | <ul style="list-style-type: none"> <li>- North pole</li> <li>- South pole</li> </ul> <p>3.2 Use bar magnet to treat different ailments.</p> | <p>bar magnet i.e.<br/> - North pole<br/> - South pole</p> <ul style="list-style-type: none"> <li>• Demonstrate various methods by which bar magnet can be used to treat different ailments</li> </ul> |  |
| <b>General Objective 4.0: Know the uses of magnet and its management.</b> |  |   |  |   |  |  |

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| 7. | <p>4.1 Describe the methods of preparation of magnetized water.</p> <p>4.2 Describe the characteristics of magnetized water.</p> <p>4.3 Differentiate between magnetized and non-magnetized water.</p> | <ul style="list-style-type: none"> <li>• Explain the method of preparation of magnetized water.</li> <li>• Explain the characteristics of magnetized water.</li> <li>• Explain the differences between magnetized and non-magnetized water.</li> </ul> |  | <p>4.1 Carry out the preparation of magnetized water.</p> <p>4.2 Identify the characteristics of magnetized water.</p> <p>4.3 Identify the differences between magnetized and non-magnetized water.</p> | <ul style="list-style-type: none"> <li>• Demonstrate the method of preparation of magnetized water.</li> <li>• Demonstrate characteristics of magnetized water.</li> <li>• Illustrate the differences between magnetized and non-magnetized water.</li> <li>• Demonstrate the method of preparation of magnetized oil.</li> </ul> | <ul style="list-style-type: none"> <li>- Water</li> <li>- Oil</li> <li>- Magnet</li> <li>- Magnetized water.</li> <li>- Magnetized oil.</li> </ul> |
| 8. | <p>4.4 State the uses of magnetized water.</p> <p>4.5 Describe the method of preparation of magnetized oil.</p> <p>4.6 Describe the characteristics of magnetized oil.</p>                             | <ul style="list-style-type: none"> <li>• Explain the uses of magnetized water</li> <li>• Explain the method of preparation of magnetized oil.</li> <li>• Explain the characteristics of magnetized oil.</li> </ul>                                     |  | <p>4.4 Carry out the preparation of magnetized oil.</p> <p>4.5 Identify the characteristics of magnetized oil.</p> <p>4.6 Identify the</p>  | <ul style="list-style-type: none"> <li>• Demonstrate the method of preparation of magnetized oil.</li> <li>• Demonstrate the characteristics of magnetized oil.</li> <li>• Guide student</li> </ul>   |  |

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|  | <p>4.7 Differentiate between magnetized and non-magnetized oil.</p> <p>4.8 State the uses of magnetized oil.</p> | <ul style="list-style-type: none"> <li>• Explain the differences between magnetized and non-magnetized oil.</li> <li>• Explain the uses of magnetized oil.</li> </ul> |  | <p>differences between magnetized and non-magnetized oil.</p> <p>4.7 Use magnetized oil for treatment of ailments.</p> | <p>to identify the differences between magnetized and non-magnetized oil.</p> <ul style="list-style-type: none"> <li>• Identify the uses of magnetized oil e.g. for treatment of ailments.</li> </ul> |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** PYRAMID ENERGY HEALTH SCIENCE II

**COURSE CODE:** EHS 215

**CREDIT HOURS:** 3.0CU

**COURSE DURATION:** THEORY – 2HOURS/WEEK; PRACTICAL – 1HOUR/WEEK

**PRE-REQUISITE:** PYRAMID ENERGY HEALTH SCIENCE II (EHS 112)

**GOAL:** This course is designed to enable students use the knowledge and skills of pyramid health sciences to manage various ailments.

**General Objectives:** On completion of this module, the students should be able to:

- 1.0. Know pyramid water and manufacturer's water.
- 2.0. Understand the concept of pyramid and meditation.
- 3.0. Understand the use of Harmony Yantra.
- 4.0. Understand the application of pyramid in the treatment of human diseases.

| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |  |   |                           |   |   |                           |
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| <b>COURSE:</b> Pyramid Energy Science II   |  |   | <b>CODE:</b> EHS 215      | <b>CREDIT UNIT:</b> 3.0   | <b>CONTACT HOURS:</b> 45 HOURS  |                           |
| <b>GOAL:</b> This course is designed to enable student use the knowledge and skills of pyramid health sciences to manage various ailments. |  |   |                           |   |   |                           |
| <b>THEORETICAL CONTENTS</b>  |  |   |                           | <b>PRACTICAL CONTENTS</b>   |   |                           |
| <b>General Objective 1.0: Understand the concept of pyramid and medication.</b>  |  |   |                           |   |   |                           |
| <b>Wk</b>  | <b>Specific Learning Outcome</b>   | <b>Teachers' Activities</b>   | <b>Learning Resources</b> | <b>Specific Learning Outcome</b>  | <b>Teachers' Activities</b>   | <b>Learning Resources</b> |
| 1-2  | <p>1.1 Define meditation</p> <p>1.2 Explain pyramid cards.</p> <p>1.3 Outline the ways of placement of building and gates in the use of pyramid.</p> <p>1.4 Explain meditation as a means of treatment of various ailments.</p> <p>1.5 Describe the process of pyramid.</p> <p>1.6 Describe the process of maintaining the</p> | <ul style="list-style-type: none"> <li>• Define meditation.</li> <li>• Explain pyramid cards.</li> <li>• Outline the ways of placement of Building and Gates in the use of pyramid.</li> <li>• Explain meditation and means of treatment.</li> <li>• Explain the process of pyramid.</li> </ul> |                           | <p>1.1 Use pyramid cards in treatment of disease.</p> <p>1.2 Practice ways of placement of building and gates in the use of pyramid cards for treatment of diseases.</p> <p>1.3 Practice meditation in treatment of various diseases.</p> | <ul style="list-style-type: none"> <li>• Illustrate the use of pyramid cards in treatment of diseases.</li> <li>• Demonstrate ways of placement of building and gates in the use of pyramid cards for treatment of diseases.</li> <li>• Demonstrate meditation in treatment of various diseases.</li> </ul> |                           |

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|  | pyramid.  | <ul style="list-style-type: none"> <li>• Explain the process of maintaining the pyramid.</li> </ul>   |  |  |  |  |
| <b>General Objective 2.0: Know pyramid water and manufacturer's water.</b> |   |   |  |  |  |  |
|  | <p>2.1 Define the Pyramid water treatment.</p> <p>2.2 Explain the pyramid wish box and its uses.</p> <p>2.3 Describe the working principles of pyramid wish box</p> | <ul style="list-style-type: none"> <li>• Explain Pyramid water treatment.</li> <li>• Explain the pyramid wish box and its uses.</li> <li>• Explain the working principles of pyramid wish box.</li> </ul> |  | <p>2.1 Produce pyramid water for treatment.</p> <p>2.2 Use pyramid wish box for treatment.</p> <p>2.3 Differentiate between pyramid water and manufacturers' water.</p> <p>2.4 Practicse above exercises above for teachers' assessment.</p> | <ul style="list-style-type: none"> <li>• Demonstrate the production of pyramid water and the manufacturers' water.</li> <li>• Demonstrate wish box treatment.</li> <li>• Guide students to differentiate between pyramid water and manufacturers' water.</li> <li>• Assess students' exercises.</li> </ul> |  |



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| <b>General Objective 3.0: Understand the use of Harmony Yantra.</b> |  |   |   |   |   |   |
| 5- 6  | <p>3.1 Define Harmony Yantra.</p> <p>3.2 Outline the laws guarding Harmony Yantra.</p> <p>3.3 Outline uses of Harmony Yantra.</p> <p>3.4 Describe the process for achieving Harmony Yantra.</p> <p>3.5 Explain the process of monitoring Harmony Yantra.</p> | <ul style="list-style-type: none"> <li>• Explain Harmony Yantra.</li> <li>• Explain the laws guarding Harmony Yantra.</li> <li>• Explain the uses of Harmony Yantra.</li> <li>• Explain the process achieving Harmony Yantra.</li> <li>• Explain the process of monitoring Harmony Yantra.</li> </ul> | <ul style="list-style-type: none"> <li>- Charts</li> <li>- Posters</li> <li>- Textbooks</li> <li>- Internet facilities</li> <li>-Video Clips</li> </ul> | <p>3.1 Practise the use of Harmony Yantra for treatment of selected diseases.</p> | <ul style="list-style-type: none"> <li>• Demonstrate Harmony Yantra for treatment of various diseases.</li> </ul> | <ul style="list-style-type: none"> <li>- Charts</li> <li>- Posters</li> <li>- Textbooks</li> <li>- Internet facilities</li> <li>-Video Clips</li> </ul> |

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| <b>General Objective: Understand the application of pyramid in the treatment of human diseases</b> |  |  |  |  |   |  |
| 7 -<br>10  | <p>4.1 Outline the role of pyramid in the treatment of diseases.</p> <p>4.2 List the diseases that can be treated by the use of pyramid cards.</p> <p>4.3 Describe the process of using pyramids for treatment of diseases in man.</p> <p>4.4 State the advantages</p> | <ul style="list-style-type: none"> <li>• Explain the role of pyramid in the treatment of diseases.</li> <li>• Explain the diseases linked by the use of pyramid treatment.</li> <li>• Describe the process of using pyramids for treatment of diseases in man</li> </ul> |  | <ul style="list-style-type: none"> <li>• Practice how to use pyramids.</li> <li>• Demonstrate how to use pyramid in the treatment of diseased conditions.</li> </ul> | <ul style="list-style-type: none"> <li>• Demonstrate how to use pyramids.</li> <li>• Show student how to treat selected diseases by the use of pyramids.</li> </ul> |  |

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|  | and disadvantages of pyramid to the treatment of diseases in man. | <ul style="list-style-type: none"><li>• Explain the advantages and disadvantages of pyramid to the treatment of diseases of human body.</li></ul> |  |  |  |  |
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# **NID 2 SEMESTERII**

**PROGRAMME :** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE  
**COURSE :** PROJECT REPORTS  
**CODE :** CSK 502  
**DURATION :** ONE SEMESTER  
**COURSE UNITS :** 2

**GOAL :** This course is designed to teach the trainee the techniques of project report writing and presentation.

**GENERAL OBJECTIVES:** On completion of this course the trainee should be:

- 1.0 Understand the essentials of a project report.
- 2.0 Know how to write/ present a good project report.

| <b>PROGRAMME: National Innovation Diploma In Energy Health Science</b>   |  |   |                             |   |   |                 |
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| <b>COURSE: PROJECT REPORTS</b>   |  |   | <b>COURSE CODE: CSK 502</b> |   | <b>CONTACT HOURS: 30 HOURS</b>  |                 |
| <b>GOAL:</b> This course is designed to teach the trainee the techniques of project report writing and presentation. |  |   |                             |   |   |                 |
| <b>Course Specification: Theoretical</b>   |  |   |                             | <b>Practical Content</b>  |   |                 |
| <b>General Objective 1.0: Understand</b> the essentials of a project report.   |  |   |                             |   |   |                 |
| <b>Week</b>  | <b>Specific Learning Outcomes</b>  | <b>Teacher's Activities</b>   | <b>Resource</b>             | <b>Specific Learning Outcomes</b>   | <b>Teacher's Activities</b>   | <b>Resource</b> |
|  | 1.1 Define a project report.<br><br>1.2 Explain the characteristics of a project report.<br><br>1.3 Explain methods of gathering data from primary, secondary and tertiary sources.<br><br>1.4 Explain the procedure for writing a project report. | Define a project report.<br><br>Provide a sample report for guidance<br><br>Analyze methods and sources of data (primary, secondary and tertiary sources).<br><br>Outline the procedure for writing a project report. |                             | <b>1.1 Gather data for writing a project report from primary, secondary and tertiary sources.</b> | <b>Guide student to gather data for writing given project report.</b> |                 |
| <b>General Objective: 2.0 Know how to write/present a good project report.</b>                                       |  |   |                             |   |   |                 |
|  | 2.1 Select a suitable topic for  | Provide guidance for trainees to  |                             | 2.1 Select a suitable topic for   | Provide guidance for trainees.  |                 |

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|  | <p>project reports.</p> <p>2.2 Use reference materials to gather data.</p> <p>2.3 Use appropriate citation and documentation styles, e.g. APA, MLA, etc.</p> <p>2.4 Write an outline of a project report using appropriate numbering, ranking and phrasing</p> <p>2.5 Write a good Project report.</p> | <p>select project topics.</p> <p>Provide suitable Samples</p> <p>Provide guidance for trainees to use appropriate citation and documentation styles e.g. APA, MLA, etc.</p> <p>Provide guidance for trainees to write an outline of a project report using appropriate numbering, ranking and phrasing.</p> <p>Write a good Project report</p> |  | <p>a project report to select project topics.</p> <p>2.2 Use reference materials to gather data.</p> <p>2.3 Use appropriate citation and documentation styles, e.g. APA, MLA, etc.</p> <p>2.4 Write an outline of a project report using appropriate numbering, ranking and phrasing</p> <p>2.5 Write a good Project report.</p> | <p>Provide suitable Samples</p> <p>Provide guidance for trainees to use appropriate citation and documentation styles e.g. APA, MLA, etc.</p> <p>Provide guidance for trainees to write an outline of a project report using appropriate numbering, ranking and phrasing</p> <p>Write a good Project report</p> |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** ENTREPRENEURSHIP II

**CODE:** EDP 202

**DURATION:** **Lecture - 1Hour/week and Practical - 2Hours/week**

**UNITS:** 3.0CU

**Goal:** This course is designed to enable trainees develop and practice entrepreneurial competencies by starting and managing a mini enterprise in the school.

**General Objectives:** At the end of the course, the trainee should be able to:

1. Conceptualize an idea of a small enterprise.
2. Plan the establishment of a small business enterprise.
3. Establish a small business enterprise.
4. Operate a small business enterprise.
5. Share profits/losses as appropriate.
6. Dissolve or sale of a small business enterprise.



| <b>PROGRAMME:</b> National Innovation Diploma In Energy Health Technology   |  |   |                             |  |   |   |
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| <b>COURSE:</b> ENTREPRENEURSHIP II  |  |   | <b>COURSE CODE:</b> EDP 202 |  | <b>CONTACT HOURS:</b> 45 HOURS  |   |
| <b>GOAL:</b> This course is designed to enable trainees develop and practice entrepreneurial competencies by starting and managing a mini enterprise in the school. |  |   |                             |  |   |   |
| <b>Course Specification: Theoretical</b>  |  |   |                             | <b>Practical Content</b>                     |   |   |
| <b>General Objective 1.0:</b> Conceptualize an idea of a small enterprise.  |  |   |                             |  |   |   |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>                  | <b>Teacher's Activities</b>                                       | <b>Resource</b>             | <b>Specific Learning Outcomes</b>            | <b>Teacher's Activities</b>   | <b>Resource</b>   |
|   | 1.1 Explain how to conceptualize a small business. | Explain in practical terms how to conceptualize a small business. | Case Studies                | 1.1 Conceptualize a business of your choice. | a. Identify all the necessary activities involved in business such as:<br>- Development of proposals.<br>- Mobilizing funds.<br>- Public Relations.<br>- Promotion and advertising.<br>- Selling.<br>- Production.<br>- Purchasing.<br>- Record Keeping.<br>- Maintenance.<br>- Legality and regulations.<br>- Communications.<br>- Banking and | Business plans.<br>Video machines,<br>Case Studies,<br>Video tapes,<br>VCR/TV<br>Registration documents,<br>Books of Accounts.<br>Business income.<br>CAMA<br>MOU etc<br>Personnel Records,<br>Stores |

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|   |  |  |  |   | <p>Cash transaction</p> <ul style="list-style-type: none"> <li>- Stocks Control.</li> <li>- Personnel Coordination.</li> <li>- Security.</li> <li>- Monitoring and Evaluation.</li> </ul> <p>b. Guide trainees to participate in one or more of the following activities for possible implementation.</p> <p>c. Group together trainees with similar interests to conceptualize businesses of their choice.</p> | <p>documents.</p> <p>Promotion documents.</p> |
| <b>General Objective 2.0:</b> Plan the establishment of a small business enterprise |  |  |  |   |   |   |
|   | <p>2.1 Explain how to plan the formation of a small business.</p> <p>2.2 Explain considerations for business</p> | <p>terms how to Form a small business enterprise.</p> <p>Explain Considerations for business location.</p> |  | <p>2.1 Plan the establishment of a small business enterprise.</p> <p>2.2 Establish small business of your</p> | <p>Group together trainees with similar interests to plan the establishment of the project selected above or new small business of their choices.</p>   |   |

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|  | location.   |   |  | choice.  |   |  |
| <b>General Objective 3.0: Establish a small business enterprise.</b> |   |   |  |  |   |  |
|  | 3.1 Explain how to establish a small business enterprise.   | Explain in terms of practical application, how to establish a small business enterprise |  | 3.1 Establish a small Business enterprise.<br><br>3.2 Prepare a report on the experiences in small business. | Ask trainees to prepare a plan for the mini enterprise.<br><br>Supervise the establishment of the project to be implemented over a period up to a year or more, until students' graduation. |  |
| <b>General Objective 4.0: Operate a small business enterprise.</b>   |   |   |  |  |   |  |
|  | 4.1 Explain how to run/manage a small business in terms of the basic role of management in an enterprise. | Explain in practical terms how to run/manage a small business enterprise.               |  | 4.1 Manage the enterprise established  | Monitor the management of the enterprise established  |  |
| <b>General Objective 5.0: Share profits/losses as appropriate.</b>   |   |   |  |  |   |  |
|  | 5.1 Explain bankruptcy and liquidation of a business..  | Explain bankruptcy and liquidation of a business.                                       |  | 5.1 Identify problems that can lead to liquidation of a business.  | Guide trainees to identify problems that can lead to the dissolution of a going concern.  |  |
|  | 5.2 Identify problems   | Explain problems  |  |  |   |  |

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|   | that can lead to liquidation of a going concern.<br>5.3 Describe the steps of business liquidation.                  | that can lead to liquidation of a business.<br>Explain the steps of business liquidation.                     |  | 5.2 Follow all the steps to liquidate a business.<br><br>5.3 Practice how to appoint liquidators/ receiver/ valuer after following liquidation of a business. | Guide them to liquidate the business if faced with such problems or when about to graduate.<br><br>Guide students to appoint liquidators/ receiver/ valuer after following liquidation of a business. |  |
| <b>General Objective 6.0: Dissolve or sale of a small business enterprise</b> |  |   |  |   |   |  |
|   | 6.1 Explain how to share profits/losses of a business before and after dissolution or sale of a business enterprise. | Describe how profits/losses are shared during operations and after liquidation/sale of a business enterprise. |  | 6.1 Perform simple calculations using simple ratios<br>Share profits/losses Appropriately.  | Introduce trainees to ratios and sharing formulas adopted in sharing profits/losses.<br><br>Ask trainees to present their experiences in the project.   |  |

**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** REIKI ENERGY HEALTH SCIENCE II

**CODE:** EHS 202

**CREDIT UNIT:** 2.0

**CREDIT HOURS:** THEORY – HOUR/WEEK; PRACTICAL – 1HOUR/WEEK

**GOAL:** The course is designed to enable the students apply theoretical knowledge and practical skills acquired in Reiki for managing various ailments.

**GENERAL OBJECTIVE:** On completion of this course, the students should be able to:-

- 1.0 Know the application of Reiki in the management of ailments
- 2.0 Know other roles/practical approaches of Reiki Health Science.



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| <b>PROGRAMME:</b> NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE   |   |  |  |   |  |                  |                           |
| <b>COURSE:</b> REIKI ENERGY SCIENCE II   |   |  | COURSE CODE: EHS 202   |   | COURSE UNIT: 2.0   |                  | CONTACT HOUR:<br>30 HOURS |
| <b>Goal:</b> The course is designed to enable the students apply theoretical knowledge and practical skills acquired in Reiki for managing various ailments. |   |  |  |   |  |                  |                           |
| <b>General Objectives</b> 1.0: Know the application of reiki in the management ailments  |   |  |  |   |  |                  |                           |
| <b>THEORETICAL CONTENT</b>   |   |  |  | <b>PRACTICAL CONTENTS</b>   |  |                  |                           |
| <b>WEEK</b>  | <b>Specific Learning outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b>   | <b>Specific Learning outcomes</b>   | <b>Teacher's activities</b>  | <b>Resources</b> |                           |
| 1.   | 1.1 Explain how Reiki works.<br><br>1.2 Explain the use of the following in Reiki characteristics:<br>- Year of Birth<br>- Name<br>- Height<br>- Health Status.<br><br>1.3 Outline the advantages of using Reiki for treatment of ailments. | Explains the workings of Reiki<br><br>Guide students on use of Reiki characteristics | - White board marker<br>- Marker<br>- Lecture note<br>- Text books | 1.1 Demonstrate how Reiki works<br><br>1.2 Treat yourself or a patient using Reiki Approach | Demonstrate how Reiki works.<br><br>Guide the students on how to use Reiki for treatment of various diseases |                  |                           |

| General Objectives 2.0: Know other roles/ practical approaches of reiki health science |   |  |   |   |  |  |
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| 1.   | 2.1 List the roles of Reiki.  | Describe how Reiki works.  | -White board marker<br>-Lecture note<br>-Text books | 2.1 Practice on use of Reiki Circle.                                  | Demonstrate Reiki Circle.  | -White board marker<br>-Lecture note<br>-Text books<br>-Human being or Dummy |
|  | 2.2 Explain Reiki Circle.   | Explains Reiki Circle.   |   | 2.2 Practice use of Reiki in distance treatment.                      | Illustrate how to send distance treatment.                       |  |
|  | 2.3 State the Importance of team treatment in Reiki.  | Explain the Importance of team treatment in Reiki.                           |   | 2.3 Demonstrate how to use Reiki for the solution of social problems. | Illustrate how to use Reiki for the solution of social problems. |  |
|  | 2.4 Explain how to combine Reiki with other forms of treatment.   | Explain how to combine Reiki with other forms of treatment                   |   |   |  |  |
|  | 2.5 Outline how to send distance treatment.   | Expatiate how to send distance treatment.                                    |   |   |  |  |
|  | 2.6 List social problems associated with illness in the community i.e.<br>a. Mending relationships<br>b. Remedy difficulties and hardship | Explain use of Reiki for the solution of social problems within a community. |   |   |  |  |



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|  | <p>c. Increases memory ability</p> <p>d. Restore total peace and harmony in our midst.</p> <p>2.7 Describe how Reiki can be used to manage social problems in 2.6 above.</p> | <p>Explain how Reiki can be used to manage social problems in 2.6 Above.</p> |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH TECHNOLOGY

**COURSE:** COLOUR ENERGY SCIENCE II

**CODE:** EHS 204

**COURSE UNITS:** 2.0CU

**DURATION:** THEORY – 1HOUR/WEEK AND PRACTICAL – 1HOUR/WEEK

**GOAL:** This course is designed to enable the students appreciate colour and apply it in the treatment of diseases.

**GENERAL OBJECTIVES:** On completion of this course the students should be able to:-

- 1.0 Understand the diagnosis of disease with colour.
- 2.0 Know the application of colour in the treatment of diseases.
- 3.0 Understand the natural phenomenon of colour.

| PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE          |  |   |                      |  |  |  |
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| COURSE: Colour Energy Science II   |  |   | Course Code: EHS 204 |  | Credit Unit: 2.0   |  |
| Year 2 Semester 2  |  |   | Pre-Requisite        |  | Contact Hour: 30 Hours   |  |
| Theoretical Content  |  |   | Practical Content    |  |  |  |
| General Objectives 1.0: Understand the diagnosis of diseases with colour |  |   |                      |  |  |  |
| Week   | Specific Learning Outcomes   | Teacher's activities  | Resources            | Specific Learning Outcomes   | Teacher's activities   | Resources  |
|  | 1.1 List the steps in the use of colour for disease diagnosis.<br><br>1.2 Explain each step involved in disease diagnosis with colour.<br><br>1.3 Explain the effect of colour on pathological states of human body.<br><br>1.4 Describe the techniques in colour visualization.<br><br>1.5 Describe the techniques of spectrum tonation.<br><br>1.6 Explain the radionic technique of | <ul style="list-style-type: none"> <li>Enumerate the steps in the use of colour for disease diagnosis.</li> <li>Describe the steps involved in the disease diagnosis using colour.</li> <li>Explain the effect of colour on pathological states of a human body.</li> <li>Explain the techniques in colour visualization.</li> <li>Explain the techniques of spectrum tonation.</li> <li>Explain the radionics techniques of</li> </ul> | Class room           | 1.1 Display the preparatory steps for the diagnosis of ailments with the aid of colour.<br><br><br><br><br><br><br><br><br><br>1.2 Carryout the procedure for the diagnosis of ailments with the aid of colour | <ul style="list-style-type: none"> <li>Describe the steps involved for the preparatory section in ailments with colour</li> <li>Demonstrate the procedure for the diagnosis of ailment with aid of colour</li> </ul> | Energy point detector,<br><br>Colour display and energy point on human body. |

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|  | <p>application of colour spectrum.</p> <p>1.7 State types of spectrum tonation</p>  | <p>application of colour spectrum.</p> <ul style="list-style-type: none"> <li>• Explain spectrum tonation,</li> <li>• Explain types of spectrum tonation and applications of each type.</li> </ul>  |   |   |  |  |
| <b>General Objectives</b> 2.0: Know the application of colour. |   |   |   |   |  |  |
|  | <p>2.1 State the principle and techniques in the application of colour.</p> <p>2.2 Describe the clavoyant view of organs of the body and colour treatment.</p> <p>2.3 List the twenty three (23) principles of normal colour for healthy body points.</p> <p>2.4 Outline the trigger points and selecting areas in the organ treatment.</p> | <ul style="list-style-type: none"> <li>• Explain the principle and techniques in the application of colour.</li> <li>• Explain the clavoyant view of organs of the body and colour treatment.</li> <li>• Explain the twenty three (23) principle of normal colour for healthy body points.</li> <li>• Explain trigger points and selecting areas in the organ treatment.</li> </ul> | <p>- Classroom Resources</p> <p>- Colour Spectrum</p> | <p>2.1 Carryout the procedure step by step for the application of colour on the human body using the following:</p> <p>a). Dye sticking<br/>b). Colour tonation<br/>c). Spectrum emission.</p> <p>2.2 Carryout the energy point triggering during ailment treatment with colour</p> | <p>Explain the procedures involve in the application of colour for treatment of ailment such as:</p> <p>a). Dye sticking<br/>b). Colour Tonation<br/>c). Spectrum emission</p> <p>Demonstrate how to trigger an energy centre or point with the aid of colour.</p> | <p>Energy point on human body</p> <p>Colour energy point detector and probe.</p> |

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|  | 2.5 List the apparatuses and general directives in the treatment of diseases with colour.   | <ul style="list-style-type: none"> <li>• Explain the apparatuses and general directives in the treatment of diseases with colour.</li> </ul>   |                       |   |  |   |
| <b>General Objectives 3.0: Understand the natural phenomenon of colour</b> |   |  |                       |   |  |   |
|  | <p>3.1 Define natural colours.</p> <p>3.2 State the types of natural colours.</p> <p>3.3 Classify natural colour according to their sources.</p> <p>3.4 Outline the effects of natural colour on the treatment of various ailments e.g.</p> <ul style="list-style-type: none"> <li>- Jaundice</li> <li>- Hepatitis</li> <li>- Impotence,</li> <li>- Diabetes</li> </ul> <p>3.5 Outline various colour spectrum present from solar system.</p> | <ul style="list-style-type: none"> <li>• Define natural colours.</li> <li>• Explain types of natural colours.</li> <li>• Explain the classification of natural colours.</li> <li>• Explain the effects of natural colours in the treatment of various ailments listed in 3.4.</li> <li>• Describe various</li> </ul> | - Classroom resources | <p>3.1 Identify the steps involved in the preparation of solarized water.</p> <p>3.2 Carry out the procedure involved in the preparation of solarized water using solar system.</p> <p>3.3 Identify the steps involved in the preparation of red, orange and yellow colour diets (i.e. warm colours).</p> | <ul style="list-style-type: none"> <li>• Demonstrate the processes involved in the preparation of solarized water.</li> <li>• Demonstrate how to prepare solarized water with the aid of solar system.</li> <li>• Demonstrate the processes involved in the preparation of warm colour spectrum (red, orange and yellow</li> </ul> | <ul style="list-style-type: none"> <li>- Open space for getting direct sunlight</li> <li>- Container to hold water</li> <li>- Clean water</li> <li>- Colour Filter</li> </ul> |

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|  | <p>3.6 Define Diet.</p> <p>3.7 Explain the importance of in human life.</p> <p>3.8 Categorize colours that occur in various components of a given diet.</p> <p>3.9 Outline the following diets with their relevant colours significances:</p> <ul style="list-style-type: none"> <li>- Mango</li> <li>- Water Lemon</li> <li>- Yellow maize grain</li> <li>- White maize grain</li> <li>- Cassava</li> <li>- Rive</li> <li>- Yam</li> <li>- Cucumber</li> <li>- Cashew</li> <li>- Orange</li> <li>- Red apple</li> <li>- Green apple</li> </ul> | <p>colour spectrum present in the solar system.</p> <ul style="list-style-type: none"> <li>• Explain diet.</li> <li>• Explain the mportance in human life.</li> <li>• Categorize colours that occur in various components of a given diet.</li> <li>• Describe the single colour or colour combination present in the various diets listed in 3.9.</li> </ul> |  | <p>3.4 Carry out the procedures involved in the preparation of the various colour spectrum, namely;</p> <ul style="list-style-type: none"> <li>- warm colour diet (red, orange, yellow)</li> <li>- Mid colours diet (green)</li> <li>- Cold colour diet (blue, violet, ultra-violet).</li> </ul> | <p>colours).</p> <ul style="list-style-type: none"> <li>• Demonstrate how to prepare various diets in reference to various colour spectrum, namely; <ul style="list-style-type: none"> <li>a. warm colour diet (red, orange, yellow)</li> <li>b. Mid colours diet (green)</li> <li>c. Cold colour diet (blue, violet, ultra-violet).</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>- Motar and Spindle</li> <li>- Grinder/ Blender</li> <li>- Extractio-nating Column</li> <li>- Centrifuge</li> <li>- Sieve</li> <li>- SeparatingFu nnel</li> <li>- Filtrating Column</li> <li>- Beaker</li> <li>- Connecting tubes</li> <li>- Conical flask</li> <li>- Distillator</li> <li>- Fractioning flask</li> <li>- pH meter</li> <li>- Refrigerator</li> <li>-</li> </ul> |
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|  | <ul style="list-style-type: none"> <li>- Carrot</li> <li>- Cabbage</li> <li>- Green beans</li> <li>- White beans</li> <li>- Brown beans</li> <li>- Etc</li> </ul> <p>3.10 State the relationship between diet essence and colour essence in the enhancement of health and treatment of ailments</p> <p>3.11 Enumerate the advantages and disadvantages of using diet to fortify the colour needed in a human body.</p> | <ul style="list-style-type: none"> <li>• Relate the diet essence to the colour essence for the enhancement of body physiology.</li> <li>• Explain the advantages and disadvantages of fortifying the colour needed in the body system with the aid of diet.</li> </ul> |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA (NID) IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** YOGA ENERGY HEALTH SCIENCE II

**COURSE CODE:** EHS 206

**CREDIT UNIT:** 2.0

**CONTACT HOURS:** THEORY -1 HOUR; PRACTICAL – 1 HOUR

**PRE-REQUISITE:** YOGA ENERGY HEALTH SCIENCE II (EHS 207)

**GOAL:** At the end of this course, students should have the skills to enable them use it in the treatment of different diseases.

**GENERAL OBJECTIVES:** On the completion of this course, the students should be able to:

- 1.0 Understand the principles and concepts of Yoga EnergyHealth.
- 2.0 Know the use of Asanas in Yoga Health for the Activation of Energy points in Human.
- 3.0 Know the practice of Yoga Energy for the enhancement of human health.



| PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH TECHNOLOGY   |  |   |                      |                            |                        |           |
|--|--|---|----------------------|----------------------------|------------------------|-----------|
| COURSE: YOGA ENERGY HEALTH SCIENCE II  |  |   | Course Code: EHS 206 | Credit Unit: 2.0           | Contact Hour: 30 Hours |           |
| GOAL: At the end of this course, students should have the skills to enable them use it in the treatment of different diseases. |  |   |                      |                            |                        |           |
| Theoretical Content  |  |   |                      | Practical Content          |                        |           |
| General Objectives 1.0: Understand the principles and concepts of Yoga Energy Health.  |  |   |                      |                            |                        |           |
| Week   | Specific Learning outcomes   | Teacher's activities  | Resources            | Specific Learning outcomes | Teacher's activities   | Resources |
| 1.   | 1.1 Define Yoga Energy Science.<br><br>1.2 Outline the history of Yoga Energy Health.<br><br>1.3 List the types of ailments that can be treated with Yoga: <ul style="list-style-type: none"> <li>✓ Thyroid gland</li> <li>✓ Headache and diseases</li> <li>✓ Hypertension</li> <li>✓ Asthma and bronchitis</li> <li>✓ Tonsillitis</li> <li>✓ Diarrhea</li> <li>✓ Constipation</li> <li>✓ Peptic ulcer</li> <li>✓ Hepatitics</li> <li>✓ Obesity</li> <li>✓ Diabetes</li> <li>✓ Arthritis</li> <li>✓ Spondylitis</li> </ul> | Define Yoga Energy Science.<br><br>Explain the history of Yoga Energy Science.<br><br>Explain the importance of Yoga to health.<br><br>Express the rationale for their application f Yoga Energy Science in management of ailments. |                      |                            |                        |           |

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|   | <ul style="list-style-type: none"> <li>✓ Piles (hemorrhoid)</li> <li>✓ Hernia</li> <li>✓ Menstrual abnormalities</li> <li>✓ Eye problems etc</li> </ul> <p>1.4 State the rationale for application of Yoga Energy Health for the management of ailments.</p> <p>1.5 State the advantages and disadvantages of Yoga Energy application.</p> <p>1.6 Explain the process of using Yoga to treat ailments.</p> |   |  |   |  |  |
| <b>GENERAL OBJECTIVES 2.0: Know the use of Asanas in Yoga Health for the Activation of Energy points in Humans.</b> |  |   |  |   |  |  |
|   | <p>2.1 Explain Asana in Yoga Energy Health.</p> <p>2.2 Classify types of Yoga Asanas according to their effects on Energy points.</p> <p>2.3 List the various types of Yoga Asanas based on the classification in 2.2 above.</p>   | <p>Explain Yoga Asanas in relation to Energy point activation.</p> <p>Classify the Asanas in according to their relative effect on Energy points.</p> <p>Describe the Yoga Asanas based on the classification on 2.2 above.</p> | <p>- Classroom Resources</p> <p>- Energy points on human body area</p> | <p>2.1 Demonstrate the Asanas and their effects to human body</p> | <p>Display the steps for students to emulate</p> | <p>- Human beings</p> <p>- Dummies</p> |

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|   | 2.4 Explain the poses of Asanas and their effects to human health.  |   |  |   |   |  |
| <b>GENERAL OBJECTIVES 3.0: Know the use of Asanas in Yoga Health for the Activation of Energy points in Human</b> |   |   |  |   |   |  |
|   | <p>3.1 Describe each Yoga Asanas listed in 2.2.</p> <p>3.2 <u>Padma Asana:</u><br/>Explain the process involved in padma Asana.</p> <p>3.3 <u>Sukha Asana:</u><br/>Describe the steps involved in sukha Asana.</p> <p>3.4 <u>Uttanpada Asana:</u><br/>Express the process involved in the display of Uttanpada Asana with one leg up.</p> <p>3.5 Explain the health challenges to the following Asanas:<br/> <ul style="list-style-type: none"> <li>•Tara Asana</li> <li>•Yoga mudra</li> <li>•Ushra Asana</li> <li>•Simha Asana</li> <li>•Savanger Asana with hands up,</li> <li>•Etc.</li> </ul> </p> | <p>Explain each Yoga Asanas listed in 2.2.</p> <p><u>Padma Asana:</u><br/>Explain the process involved in padma Asana.</p> <p><u>Sukha Asana:</u><br/>Explain the steps involved in sukha Asana.</p> <p><u>Uttanpada Asana:</u><br/>Explain the process involved in the display of Uttanpada Asana with one leg up.</p> <p>Explain the health challenges to the following Asanas:<br/> <ul style="list-style-type: none"> <li>•Tara Asana</li> <li>•Yoga mudra</li> <li>•Ushra Asana</li> <li>•Simha Asana</li> <li>•Savanger Asana with hands up</li> <li>•Etc.</li> </ul> Explain how the following</p> |  | <p>3.1 Position human for display of padma Asana.</p> <p>3.2 Position human for display of Sukha Asana.</p> <p>3.3 Position human for demonstration of uttanpa Asana with one leg up and two legs up.</p> <p>3.4 Demonstrate Pawanmukta Asana position.</p> <p>3.5 Demonstarate Bhujanga position.</p> <p>3.6 Demonstrate shatabha Asana with one leg at a time.</p> <p>3.7 Shatabha Asana with two legs at a time.</p> | <p>Position human for display of padma Asana.</p> <p>Position human for display of Sukha Asana.</p> <p>Position human for demonstration of uttanpa Asana with one leg up and two legs up.</p> <p>Demonstrate Pawanmukta Asana position.</p> <p>Demonstarate Bhujanga position.</p> <p>Demonstrate shatabha Asana with one leg at a time.</p> <p>Shatabha Asana with two legs at a time.</p> |  |

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|  | <p>3.6 Describe how the following can be used in the treatment of eye ailment:</p> <ul style="list-style-type: none"> <li>• Salendhar Bandha Asana.</li> <li>• Bhastrika Psanayana</li> <li>• Shitali Pranayama</li> </ul> | <p>can be used in the treatment of eye ailment:</p> <ul style="list-style-type: none"> <li>• Salendhar Bandha Asana.</li> <li>• Bhastrika Psanayana</li> <li>• Shitali Pranayama</li> </ul> |  |  |  |  |
|  | <p>3.7 Display uttanpa Asana with two legs.</p>  | <p>Display uttanpa Asana with two legs.</p>   |  |  |  |  |
|  | <p>3.8 List the energy points in the application of panwanmukta Asana.</p>   | <p>Explain the energy points in the application of panwanmukta Asana.</p>   |  |  |  |  |
|  | <p>3.9 Explain the process of demonstrating pawanmukta Asana.</p>  | <p>Explain the process of demonstrating pawanmukta Asana.</p>   |  |  |  |  |
|  | <p>3.10 Describe the steps involved in the expression of Bhujanga Asana</p>  | <p>Explain the steps involved in the expression of Bhujanga Asana</p>   |  |  |  |  |
|  | <p>3.11 Describe the steps involved</p>  | <p>Explain the steps involved in the expression of shatabha Asana with one leg at a time.</p>   |  |  |  |  |

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|  | <p>in the expression of shatabha Asana with one leg at a time.</p> <p>3.12 Describe the involved in the expression of shatabha Asana with two legs at a time.</p> <p>3.13 List the steps on the preparation activities of the following Asanas:</p> <ul style="list-style-type: none"> <li>• Tara Asana</li> <li>• Yoga mudra</li> <li>• Ushtra Asana</li> <li>• Veera Asana</li> <li>• Gomukh Asana.</li> </ul> | <p>Explain the involved in the expression of shatabha Asana with two legs at a time.</p> <p>List the steps on the preparation activities of the following Asanas:</p> <ul style="list-style-type: none"> <li>• Tara Asana</li> <li>• Yoga mudra</li> <li>• Ushtra Asana</li> <li>• Veera Asana</li> <li>• Gomukh Asana.</li> </ul> |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE TITLE:** GEM ENERGY SCIENCE

**COURSE CODE:** EHS 208

**CREDIT UNIT:** 3.0

**CONTACT HOUR:** THEORY- 2HOURS/WEEK; PRACTICAL- 1HOUR/WEEK

**GOAL:** This course is designed to enable the student update their knowledge and skills in the application of various gem energy for the treatment of various diseases.

**GENERAL OBJECTIVES:** On completion of this course, the students should be able to:

- 1.0 Understand the philosophy and principles of gem energy health.
- 2.0 Understand the scientific contribution of gem theories and usage.
- 3.0 Know the application of different gems for treatment of various ailments.
- 4.0 Understand the roles of ray patterns of gem stones to the human body and healing.
- 5.0 Understand the legends of gem health stones.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |  |  |  |                           |                               |                    |
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| <b>Course: Gem Energy</b>  |  | <b>Course Code: EHS 208</b>  |  | <b>Credit Unit: 3.0</b>   | <b>Contact Hour: 45 Hours</b> |                    |
| <b>Year II Semester 2</b>  |  | <b>Pre-Requisite:</b>  |  | <b>Credit Unit: 3.0</b>   |                               |                    |
| <b>Goal:</b> This course is designed to enable the student update their knowledge and skills in the application of various gem energy for the treatment of various diseases. |  |  |  |                           |                               |                    |
| <b>GENERAL OBJECTIVE:- 1.0</b> Understand the philosophy and principles of gem energy health   |  |  |  |                           |                               |                    |
|  | <b>THEORETICAL CONTENT</b>   |  |  | <b>PRACTICAL CONTENT</b>  |                               |                    |
| Week   | Specific Learning Outcome  | Teachers Activities  | Learning Resources   | Specific Learning Outcome | Teachers Activities           | Learning Resources |
| 1  | 1.1 State the philosophy of Gem Energy Health.<br><br>1.2 Outline the principles of Gem Energy Health.<br><br>1.3 List different Gem Energy Health Stones i.e:-<br>a. Diamond<br>b. Gold<br>c. Amaethyst<br>d. Blood stone | Explain the philosophy of Gem Energy Health.<br><br>Explain the principles of Gem Energy Health.<br><br>Explain the different Energy Gem Health Stones.<br><br>Explain the different functions of Gem Energy Health. | -White marker board/Marker<br><br>-Textbooks/ journals<br><br>-Rosters |                           |                               |                    |

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|  | e. Cats eye<br>f. Emerald<br>g. Safera, etc.          |  |  |  |  |  |
|  | 1.4 Enumerate the functions of the Gem Energy Health. |  |  |  |  |  |



| <b>GENERAL OBJECTIVE:- 2.0 Understand the scientific contributions of gem theories and usage</b> |  |   |  |   |  |  |
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| 2  | <p>2.1 Define Gem Health Theories.</p> <p>2.2 List different Gem Health Theories<br/>i.e.<br/>a. Newton<br/>b. Maxwell<br/>c. Simpson<br/>d. Geothar.</p> <p>2.3 Enumerate the application of Gem theories in Gem Energy Health Science.</p> | <p>Explain Gem theories.</p> <p>Explain the different Gem theories</p> <p>Explain the application of Gem theories in Gem Energy Health Science.</p> | <p>-Markerboard / Marker</p> <p>-Textbooks/ journals</p> | <p>2.1 Use two of the Gem theories for treatment of patients.</p> | <p>Demonstrate how to use two of the Gem theories for treatment of patients.</p> |  |

| <b>GENERAL OBJECTIVE:- 3.0</b> Know the application of different health gem for treatment of various ailments   |  |   |   |  |  |                             |
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| 3   | <p>3.1 Define colour.</p> <p>3.2 List the component of Colours i.e.</p> <p>a. green</p> <p>b. yellow</p> <p>c. red</p> <p>d. blue</p> <p>e. indigo, etc</p> <p>3.3 List the relationship of Colour in relation to Gem Health Science.</p> <p>3.4 Explain comprehensively the Nitrogen circle</p> <p>3.5 Enumerate on the physics of light.</p> | <p>Explain Colours.</p> <p>Enumerate on the component of colour</p> <p>Explain the relationship of colour in relation to Gem Health Science.</p> <p>Illustrate the examples of nitrogen circle.</p> <p>Enumerate on the physics of light.</p> | <p>-Markerboard/ Marker</p> <p>-Notes</p> <p>-Rosters/ chats of colours</p> | <p>3.1 Identify the different components of colours.</p> <p>3.2 Use painted objects to show different colours.</p> <p>3.3 Illustrate with Nitrogen circle chart.</p> | <p>Show students different components of colours.</p> <p>Demonstrate the different kinds of colours using painted objects</p> <p>Illustrates with nitrogen circle chart.</p> | <p>Nitrogen circle chat</p> |
| <b>GENERAL OBJECTIVES: 4.0</b> Understand the roles of ray patterns of gem stones to the human body and healing |  |   |   |  |  |                             |
|   | <b>THEORETICAL CONTENT</b>   |   |   | <b>PRACTICAL CONTENT</b>   |  |                             |
| <b>Week</b>   | <b>Specific Learning Outcomes</b>  | <b>Teachers activities</b>  | <b>Resources</b>  | <b>Specific Learning Outcomes</b>  | <b>Teachers activities</b>   | <b>Reasources</b>           |
| 4   | 4.1 Define ray patterns stones.  | Explain ray pattern stone.  | -Markerboard / Marker<br>-Lecture notes                                     | 4.1 Identify different ray pattern stones.   | Identify different ray pattern stones.   |                             |

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|   | <p>4.2 Outline the concept of ray pattern stones.</p> <p>4.3 List types of ray pattern stones.</p> <p>4.4 Describe the application of ray pattern stone treatment.</p> <p>4.5 Enumerate the limitations of the use of ray pattern stones in the treatment of disease conditions.</p> | <p>Explain the concept of ray pattern stone.</p> <p>Explain the types of ray pattern stones.</p> <p>Explain the application of ray pattern stone on treatment.</p> <p>Explain the limitations in the treatment of disease conditions.</p> |  | <p>4.2 Demonstrate the use of ray patterns stones for treatment of ailments.</p> | <p>Demonstrate the use of ray patterns stones for treatment of ailments.</p> |  |
| <b>GENERAL OBJECTIVES: 5.0 Understand the legends of gem health stone</b> |  |   |  |  |  |  |
| <b>5</b>  | <p>5.1 Explain legends of Gem health stone.</p> <p>5.2 List types of the legends in Gem health stone:-<br/> a. Oral (traditional)<br/> b. Mythology<br/> c. Written (records and archives).</p>  | <p>Elaborate on legends of Gem health stone.</p> <p>Explain the types of Legends in Gem Health Stone.</p>   |  |  |  |  |

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|  | <p>5.3 Explain each legend type listed in 5.2 above.</p> <p>5.4 List the purpose of mythology e.g<br/> a. For reference<br/> b. Further discoveries<br/> c. Personal purpose<br/> d. Documentation</p> <p>5.5 State the application of each purpose of Mythology listed in 5.4 above.</p> | <p>Give examples of different types of Legend in Gem Health Stone</p> <p>Explain the purpose of mythology e.g.<br/> a. For reference<br/> b. Further discoveries<br/> c. Personal purpose<br/> d. Documentation</p> <p>Explain the areas of application of each purpose of Mythology listed in 5.4.</p> |  |  |  |  |
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**PROGRAMME:** NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE

**COURSE:** ASTROLOGY ENERGY MEDICAL SCIENCE II

**CODE:** EHS 210

**COURSE UNIT:** 4.0

**CONTACT HOURS:** THEORY: 2HOURS/WEEK; PRACTICAL: 2HOURS/WEEK

**PRE-REQUISITE:** ASTROLOGY ENERGY MEDICAL SCIENCE I (EHS 203)

**GOAL:** This course is designed to enable the students use numerology and palmistry in daily life activities.

**GENERAL OBJECTIVES:** On completion of this course, the students should be able to:

- 1.0 Know the meaning of alphabets and numbers of their names.
- 2.0 Know the importance of numbers and their effect in their daily life activities.
- 3.0 Understand the importance of palmistry in everyday life.

| <b>PROGRAMME: NATIONAL INNOVATION DIPLOMA IN ENERGY HEALTH SCIENCE</b>   |  |  |                                   |   |   |  |
|--|--|--|-----------------------------------|---|---|--|
| <b>COURSE: ASTROLOGY ENERGY MEDICAL SCIENCE II</b>   |  |  | <b>Course Code: EHS 210</b>       | <b>Credit Unit: 4.0</b>                               | <b>Contact Hour: 60 Hours</b>                                       |  |
| <b>Year II Semester 2</b>  |  |  | <b>Pre-Requisite : EHS 203</b>    |   |   |  |
| <b>Goal: This course is designed to enable the students use numerology and palmistry in daily life activities.</b> |  |  |                                   |   |   |  |
| <b>Theoretical Content</b>   |  |  |                                   | <b>Practical Content</b>                              |   |  |
| <b>General Objectives 1.0: Know the meaning of the letters and numbers of their names.</b>                         |  |  |                                   |   |   |  |
| <b>Week</b>  | <b>Specific Learning outcomes</b>  | <b>Teacher's activities</b>  | <b>Resources</b>                  |   |   |  |
|  | 1.1 Define numerology.   | Explain the meaning of numerology.                                   | Postures.<br>Textbook / journals. | 1.1 Determine the lucky numbers for: -                | Demonstrate how to determine the lucky numbers for: -               |  |
|  | 1.2 State the origin of numerology.  | Discuss the origin of numerology.                                    | Marker<br>Board / Marker          | a. Marriage   | - Marriage  |  |
|  | 1.3 State the effect of numerology on human beings.                        | Explains the effect of numerology.                                   | Charts                            | b. Jobs   | - Jobs  |  |
|  | 1.4 Identify the special lucky numbers for marriages ,jobs, education etc. | State the special lucky numbers for marriages, jobs, education, etc. |                                   | c. Education  | - Education   |  |
|  |  |  |                                   | d. Business   | - Business  |  |
|  |  |  |                                   | e. Etc.   | - Etc.  |  |
| <b>General Objectives 2.0: Know the importance of numbers and their effect in daily life activities.</b>           |  |  |                                   |   |   |  |
|  | 2.1 Explain the meaning of alphabets.                                      | Discuss the alphabetical meanings.                                   | Posters.<br>Textbook / journals.  | 2.1 Use an alphabet to effect a social life activity. | Demonstrate how to usean alphabet to effect a social life activity. |  |
|  | 2.2 State the qualities of an alphabet.                                    | Discuss the qualities of a single number.                            | Marker / Marker<br>Board          |   |   |  |
|  | 2.3 Understand the effect of an alphabet in one's                          | Describes the effect of an alphabet in daily life.                   | Charts                            |   |   |  |

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|   | daily life.  |  |  |  |  |   |
| <b>General Objectives 3.0</b> Understand the importance of palmistry in everyday life |  |  |  |  |  |   |
|   | 3.1 Define Palmistry.                                      | Explain the meaning of palmistry.                        | Posters.<br>Textbook /<br>journals.<br>Marker<br>Board /<br>Marker<br>Charts | 3.1 Demonstrate the inspection of palms.                               | Guide the students to demonstrate the inspection of palms.                           | s |
|   | 3.2 State the origin of palmistry.                         | Explains the origin of palmistry.                        |  | 3.2 Inspect a hand and its lines.                                      | Guide the students to inspect hand and its lines                                     |   |
|   | 3.3 State the significance of the shape of hands.          | Explains the significance shape of hands.                |  | 3.3 Inspect the shape of an individual's fingers and nails and report. | Guide students to inspect the shape of an individual's fingers and nails and report. |   |
|   | 3.4 State the meaning of lines of the palms.               | Explain the meaning of the lines of the palms.           |  |  |  |   |
|   | 3.5 State the significant shapes of the fingers and nails. | Explain the significant2 shape of the fingers and nails. |  |  |  |   |
|   | 3.6 List the advantages of palmistry.                      | Explain the advantages of palmistry.                     |  |  |  |   |

**OPTIONAL COURSE**  
**BASIC MANAGEMENT OF HEALTH CARE**  
**FACILITY**  
**(EHS 212)**



# **APPENDICES**

## LIST OF TOOLS & EQUIPMENT (FOR SCIENCE LABORATORIES)

| <b>A</b>  | <b>PHYSICS LABORATORY APPARATUS</b>        | <b>QUANTITY</b> |
|-----------|--|-----------------|
| <b>1</b>  | Fly wheel of standard pattern with support | <b>3</b>        |
| <b>2</b>  | Weighing masses                            | <b>5</b>        |
| <b>3</b>  | Vernier Caliper                            | <b>3</b>        |
| <b>4</b>  | Caliper                                    | <b>3</b>        |
| <b>5</b>  | Stop clock/watch                           | <b>2</b>        |
| <b>6</b>  | Meter Rule                                 | <b>2</b>        |
| <b>7</b>  | Retort stand and clamp                     | <b>2</b>        |
| <b>8</b>  | Thread cocks                               | <b>2</b>        |
| <b>9</b>  | Brass rod                                  | <b>4</b>        |
| <b>10</b> | Balance                                    | <b>2</b>        |
| <b>11</b> | Needle                                     | <b>4</b>        |
| <b>12</b> | Microscope                                 | <b>2</b>        |
| <b>13</b> | Torsion balance                            | <b>1</b>        |
| <b>14</b> | Manometer filled with Xylon                | <b>1</b>        |
| <b>15</b> | Laboratory Travelling microscope           | <b>1</b>        |
| <b>16</b> | Bottle filled with dropping fluid          | <b>2</b>        |
| <b>17</b> | Set of glass capillary                     | <b>2</b>        |
| <b>18</b> | Knitting needle                            | <b>2</b>        |
| <b>19</b> | Spiral spring slotted weight               | <b>2</b>        |
| <b>20</b> | Screw gauge                                | <b>2</b>        |
| <b>21</b> | Micrometer                                 | <b>2</b>        |
| <b>22</b> | Ball bearing                               | <b>5</b>        |

|           |  |          |
|-----------|--|----------|
| <b>B.</b> | <b>HEAT ENERGY APPARATUS</b>                     |          |
| <b>1</b>  | Liquid in glass thermometer                      | <b>3</b> |
| <b>2</b>  | Thermocouple                                     | <b>4</b> |
| <b>3</b>  | Resistance thermometer                           | <b>3</b> |
| <b>4</b>  | Minimum and maximum                              | <b>3</b> |
| <b>5</b>  | Clinical Thermometer                             | <b>5</b> |
| <b>6</b>  | Colorimeter                                      | <b>2</b> |
| <b>7</b>  | Heater (stove)                                   | <b>2</b> |
| <b>8</b>  | Copper stirrer                                   | <b>3</b> |
| <b>C.</b> | <b>ELECTRICITY AND MAGNESIUM</b>                 |          |
| <b>1</b>  | Van de Graff Generator                           | <b>1</b> |
| <b>2</b>  | Mica paraffin wax                                | <b>2</b> |
| <b>3</b>  | Electrolytic paper                               | <b>2</b> |
| <b>4</b>  | Ceramic  | <b>2</b> |
| <b>5</b>  | Variable air capacitors                          | <b>2</b> |
| <b>6</b>  | Large capacitor                                  | <b>2</b> |
| <b>7</b>  | Large Resistors                                  | <b>2</b> |
| <b>8</b>  | Ammeter  | <b>2</b> |
| <b>9</b>  | Ballistic galvanometer                           | <b>2</b> |
| <b>10</b> | Electrical switches                              | <b>2</b> |
| <b>11</b> | Black and wire wound resistors                   | <b>2</b> |
| <b>12</b> | Variable resistors (Rheostat and Resistance Box) | <b>2</b> |
| <b>13</b> | Bar magnet                                       | <b>2</b> |
| <b>14</b> | Galvanometer                                     | <b>2</b> |
| <b>15</b> | Indications coil                                 | <b>2</b> |

| <b>D.</b> | <b>BIOCHEMISTRY AND CHEMISTRY APPARATUSES</b> |          |
|-----------|---|----------|
| S/NO      | MATERIALS                                     | QUANTITY |
| 1.        | Bunsen Burner                                 | 2        |
| 2.        | Conical Flask 250mI                           | 15       |
| 3.        | Thermostat Hot plate                          | 5        |
| 4.        | Petri-Dishes (Glass)                          | 15       |
| 5.        | Porcelain Crucible                            | 5        |
| 6.        | Round Bottom flask 500mI, 1000ml              | 5        |
| 7.        | Volumetric Flask 1000mI                       | 4        |
| 8.        | Wire Loop and Loop Holder                     | 5        |
| 9.        | Indicator (Blue and Red Litmus Paper          | 4pks     |
| 10.       | Autoclave                                     | 1        |
| 11.       | Fire Extinguisher                             | 3        |
| 12.       | Fume Cupboard                                 | 1        |
| 13.       | Geiger Muller Counter                         | 1        |
| 14.       | Polarimeter                                   | 1        |
| 15.       | Measuring Cylinder                            | 1        |
| 16.       | Electronic Balance                            | 1        |
| 17.       | Desiccator                                    | 2        |
| 18.       | Water Battle                                  | 2        |
| 19.       | Centrifuge                                    | 1        |
| 20.       | Lovibond Comparator                           | 1        |
| 21.       | Microscope s                                  | 1        |
| 22.       | Plastic Aspirator                             | 2        |
| 23.       | Oven  | 1        |
| 24.       | PH Meter                                      | 1        |

| <b>E.</b> | <b>GENERAL SCIENCE LABORATORY</b> |                        |
|-----------|-----------------------------------|------------------------|
| S/NO      | MATERIALS                         | QUANTITY               |
| 1.        | Beaker                            | 50PCS                  |
| 2.        | Burette                           | 50PCS                  |
| 3.        | Retort Stand                      | 20PCS                  |
| 4.        | Conical Flask                     | 20PCS                  |
| 5.        | Bunsen Burner                     | 10PCS                  |
| 6.        | Weighting Balance                 | 2PCS                   |
| 7.        | Indicators                        | Papers & Solutions     |
| 8.        | Tripod Stand                      | 10PCS                  |
| 9.        | Desiccators                       | 5PCS                   |
| 10.       | Hand Gloves                       | 2 Packets              |
| 11.       | Face Mask                         | 2 Packets              |
| 12.       | Reagent Bottles                   | 25PCS                  |
| 13.       | Sample Bottle                     | 20PCS                  |
| 14.       | Filter Paper                      | 10 Packets             |
| 15.       | Crucible                          | 10PCS                  |
| 16.       | Crucible Tong                     | 10PCS                  |
| 17.       | Volumetric Flask                  | 20PCS                  |
| 18.       | Flat bottomed Flask               | 20PCS                  |
| 19.       | Measuring Cylinder                | 20PCS (100ml & 1000ml) |
| 20.       | Syringe                           | 5PCS                   |
| 21.       | Pipette                           | 10PCS                  |
| 22.       | Test Tube                         | 10PCS                  |
| 23.       | Test Tube Holders                 | 50PCS                  |
| 24.       | Stop Watch                        | 10PCS                  |
| 25.       | Mercury in glass thermometer      | 10PCS                  |

|     |                   |          |
|-----|-------------------|----------|
| 26. | Scissors          | 20PCS    |
| 27. | Spatula           | 10PCS    |
| 28. | Voltmeter         | 5PCS     |
| 29. | Electrode         | 5Packets |
| 30. | Ammeter           | 5PCS     |
| 31. | Spiral Spring     | 10PCS    |
| 32. | Meter Rule        | 10PCS    |
| 33. | Weighting Balance | 2PCS     |
| 34. | Retort Stand      | 20PCS    |
| 35. | Pendulum          | 20PCS    |
| 36. | Glass Purism      | 10PCS    |
| 37. | G – Clamps        | 10PCS    |
| 38. | Cells             | 50PCSs   |

## **LIST OF TOOLS AND EQUIPMENT FOR SPECIALIZED LABORATORIES**

### **1. DEPARTMENT OF COLOUR ENERGY HEALTH**

| <b>S/N</b> | <b>NAMES OF EQUIPMENT</b>                       | <b>No of items required to a standard</b>   |
|------------|---|---|
| 1          | Colour slight                                   | Assorted numbers of items mentioned. However, machines for the manufacture of colour projectors and colour shades and this can be limited and/or borrowed due to cost.<br><b>NOTE:</b><br>The machines for the manufacture of colour projectors and colour shades are imported. |
| 2          | Colour projector                                |   |
| 3          | Various colour lamps                            |   |
| 4          | Colour rooms                                    |   |
| 5          | Equipments for the manufacture of colour slight |   |
| 6          | Equipment for the manufacture of projectors     |   |
| 7          | Equipments for colour mixtures                  |   |

### **2. DEPARTMENT OF MEDICAL ASTROLOGY**

| <b>S/N</b> | <b>NAMES OF EQUIPMENT</b>                                    | <b>Number of items required to a standard</b> |
|------------|--|---|
| 1          | Vibronic machines  | Provide as many as possible                   |
| 2          | Planet dictators   |   |
| 3          | Personality and character dictator machines                  |   |
| 4          | Portraits of planets, zodiac signs, numerology and palmistry |   |

### **3. PYRAMID DEPARTMENT**

| <b>S/N</b> | <b>NAMES OF EQUIPMENT</b> | <b>Number of items required to a standard</b>  |
|------------|---------------------------|--|
| 1          | Pyramid house             | 1  |
| 2          | Pyramid caps              | Assorted numbers of items. However, Nos 5, 6 & 7 may be limited due to cost.<br><b>NOTE:</b> |
| 3          | Colour pyramid yantra     |  |
| 4          | Pyramid box               |  |

|   |  |  |
|---|--|--|
| 5 | Equipments for the manufacture of pyramid caps     | The machines for manufacture of pyramid caps and boxes and colour pyramid yantra are imported. |
| 6 | Equipments for the manufacture of pyramid box      |  |
| 7 | Equipment for manufacture of colour pyramid yantra |  |

**4. REIKI DEPARTMENT**

There is no special equipment for Reiki Energy Health. Students are trained to be able to harness universal Energy and channel same to the Energy Health centres in the body thereby balancing the flow of Energy.

**5. GEM ENERGY HEALTH DEPARTMENT**

| S/N | Names of Equipments  | Number of items required to a standard   |
|-----|--|--|
| 1   | Various kinds of gem stones                                | We have the Gem stones and vibronic equipments but we don't have equipment for polishing them. |
| 2   | Machinery for polishing gem stones                         |  |
| 3   | Vibronic equipments for tapping the energy from gem stones |  |
| 4   | Portrait of various kinds of gem stones at least 50        |  |

**6. YOGA**

As Yoga Energy Health Science and Technology involve teaching and guiding students and natural breathing exercises, specialized postures that are applied in the treatment of various diseases and health problems. In this case, various portraits are supposed to be in the laboratory.

**7. MAGNET**

Various kinds and sizes of magnets ranging from 400 gauze to medium magnets and presently, micro magnets in form of star magnet, stick magnets, round magnets etc. Machines for production of magnets of all sizes.

**8. SUJOK**

Portraits showing the various Energy centres in the human body which the Indians call chakras while the energy is called Prana. The Chinese call the Energy lines Meridians and centres Acupuncture centres and the Energy called CHI. The Japanese on the other hand call the Energy KI. Special Meter for dictation of Energy centres as to know when the energy flows in excess or when it is depleted.



## **9. MUSIC ENERGY HEALTH DEPARTMENT**

Developed standard radionic/ vibronic equipments that can now be used to dictate, and program all aspect of Energy Health system and make remedies for human consumptions.

### **LIBRARY MATERIALS**

|     |                              |        |
|-----|------------------------------|--------|
| 1   | Human Anatomy                | 10PCS  |
| 2.  | Physiology                   | 10 PCS |
| 3.  | Biochemistry                 | 5PCS   |
| 4.  | Microbiology                 | 5PCS   |
| 5.  | Psychology                   | 2PCS   |
| 6.  | Psychology Nursing           | 3PCS   |
| 7.  | Development life style       | 2PCS   |
| 8.  | Hematology                   | 5PCS   |
| 9.  | Human Histology              | 10 PCS |
| 10. | Embryology                   | 5PCS   |
| 11. | Endocrinology                | 5PCS   |
| 12. | Pharmacology                 | 5PCS   |
| 13. | General Urology              | 5PCS   |
| 14. | Pathology                    | 5PCS   |
| 15. | Path physiology              | 10PCS  |
| 16. | Oncology                     | 5PCS   |
| 17. | Onco pathology               | 5PCS   |
| 18. | Homeopyhic material medica   | 20PCS  |
| 19. | Acupuncture Books (clinical) | 10PCS  |
| 20. | Tissue Remechies             | 10PCS  |
| 21. | Clinical Medicine            | 10     |
| 22. | Clinical Pharmacy            | 10     |
| 23. | Organon of Medicine          | 10PCS  |
| 24. | Homeopathic Philosophy       | 10     |

|     |                             |       |
|-----|-----------------------------|-------|
| 25. | Sociology                   | 3     |
| 26. | Medical Dictionary          | 5     |
| 27. | English Dictionary          | 5     |
| 28. | Advance Physics             | 5     |
| 29. | Advance Chemistry           | 5     |
| 30. | Advance Biology             | 5     |
| 31. | General Biology             | 5     |
| 32. | Radiology Text              | 5     |
| 33. | Kent Repertory              | 10PCS |
| 34. | Healing through reiki       | 50PCS |
| 35. | Magnet Therapy              | 5PCS  |
| 36. | Understanding Alt. Medicine | 50PCS |
| 37. | Tables                      | 6     |
| 38. | Chairs                      | 36    |
| 39. | Chromo Therapy              | 5PCS  |
| 40. | Colour Psychology           | 10PCS |
| 41. | Clinical Colour Therapy     | 5PCS  |
| 42. | Homeopathic Pathology       | 5PCS  |
| 43. | Allen's Key note            | 5PCS  |
| 44. | Practice of Mechine         | 5PCS  |
| 45. | Manual of medicine          | 5PCS  |

## **RECOMMENDED LIST OF BOOKS**

### **GEM ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Gem and Metal Magic (By Scott Cunningham) reprinted edition 2000. Published by Kuldeep Jain for B. Jain Publishers (P) Ltd. New Delhi India.
- 2.0 Colour Therapy (Unleash your Inner Power) by Raymond Buckland. First Indian Edition 2002. Publishers Smriti Books. New Delhi – 110028 India.
- 3.0 Colour Therapy (Healing with Colour) by R.B. Amber and A.M. Babery – Brooke. First Edition 1964, fifth reprint – 2005. Published by KCM Private Ltd, 257B. B.B. Ganguly Street. Kolkata-20012 India.

### **MAGNET ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Magnet Therapy and Acupuncture by Dr. A.K. Mehta printed in 1998 by B. Jain Publishers (P) Ltd. New Delhi India. Deutch Edition.
- 2.0 Magnet Therapy for Common diseases by Dr. M.T. Santwani. Reprinted Edition, March 2009, Published by Hind Pocket Books Prt Ltd. J. 40, Jorbagh Lane New Delhi India-110003.
- 3.0 Art of Magnet healing by Dr. M.T. Santwani. Reprinted edition 2002. Published by Kuldeep Jain for B. Jain Publishers (P) Ltd. New Delhi-India.

### **SUJOK ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Sujok Ki by Park, Jae Woo. Published by Smile Meditation Academy Prt Ltd. T-5 Dynasty Apartment E-2/14 Arera Colony BHOPAC (MP) India.
- 2.0 A Guide to Sujok Therapy by Part Jae Woo. Third edition, 2003. Published by Smile Meditation Academy Prt Ltd. T-5 Dynasty Apartment E-2/14 Arera Colony BHOPAC (MP) India.

### **PYRAMID ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Soul Searchers (Healing Power of Pyramid). By R. Venugopalm 2003 edition. Published by Kuldeep Jain for B. Jain Publishers (P) ltd. New Delhi India.
- 2.0 Pyramid for Feng Shui and Vastu. By Dr Dhara Bhatt. Ninth edition, August 2003. Published by Future Force Publication 336/43 GIDC Makarpura Baroda – 390010 India.

### **REIKI ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 The complete Reiki handbook by Walter Lubeck. First edition 1998. Published by Lotus Publications P.O.Box 325, Twin Lakes, W153181, USA.
- 2.0 Reiki, the healing touch by William Lee Rand. First Indian edition, 2011. Published by Kuldeep Jain for B. Jain Publishers (P) ltd. New Delhi India.
- 3.0 Empowerment through Reiki (Patte to personal global transformation) by Paula Horan. Indian first edition 1997. Published by Lotus light Publications P.O.Box 325 Twin Lakes, WI 53181, USA.
- 4.0 Healing through Reiki (Path to Social Harmony) by Prof. Dr. Joseph Okoro Akpa. Published 2014 edition Joe Best Books 2 Carr Street, Asata Enugu Nigeria.

### **YOGA ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Light on Yoga (The classic guide to Yoga by the worlds foremost authority) by B.K.S Iyengar. 43 impression 2012 published by the Aquarian Press, Printed and bound at Thomson Press India ltd.
- 2.0 Yogic Cure for common Diseases by Dr. Phulgenda Sinha. Revised enlarged edition 1980 published by Orient paper books – A Division of Vision Books Pvt Ltd 5A/8 Arisani rd. new Delhi – 110002
- 3.0 The origin of Modern pranic healing and arhatic Yoga. First edition March 2006. Printed in the Philippines – Institute for Inner studies Publishing foundation. INC. Metro Manila Philippines.
- 4.0 Energy Health (Key to Radiant Health) by Prof. Dr. Joseph Okoro Akpa. 2013 edition. JoeBest Books 2 Carr Street, Asata Enugu Nigeria.

### **ASTROLOGY ENERGY HEALTH SCIENCE RECOMMENDED TEXT BOOKS**

- 1.0 Do your own Horoscope by Grant Lewi. First Indian edition, 1999 – copy right by Scott Cunningham. B. Jain Publishers (P) ltd.
- 2.0 True Astrology – Basic and traditional concepts (Revised and emlarged) by S.P. Khullar. I.I.S. 2004 edition.
- 3.0 The guide to Astrology (Understanding the secrets of Stars and Planets) 2010 edition by Pariagon Books ltd.
- 4.0 Healing with Astrology by Marcia Starck. Reprinted edition 2007. Published by Health and Harmony. A division of B. Jain Publishers ltd. New Delhi India.

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