

# ENGINEER ON TECHNOLOGY OF AGRI-FOOD INDUSTRY

| Establishment                                |
|----------------------------------------------|
| Higher School of Saharan Agriculture - Adrar |

| Domain | Sector                | Speciality                       |
|--------|-----------------------|----------------------------------|
| NSL    | Agricultural Sciences | Technology of Agri-Food Industry |

## 1- Semester 1:

| Semester 1: 1 <sup>st</sup> year (Cycle 2)    |               |              |             |             |                |           |           |                 |          |
|-----------------------------------------------|---------------|--------------|-------------|-------------|----------------|-----------|-----------|-----------------|----------|
| Teaching Units (TU)                           | SVH           | V.H Weekly   |             |             |                | Coeff     | Credits   | Evaluation mode |          |
|                                               | 14-16 week    | Lecture      | T           | PW          | Others         |           |           | CC              | Exam     |
| <b>Fundamentals TU</b>                        |               |              |             |             |                |           |           |                 |          |
| <b>FTU1 (Obligatory)</b>                      | <b>202h30</b> | <b>9h00</b>  | <b>1h30</b> | <b>3h00</b> | <b>247h30</b>  | <b>9</b>  | <b>18</b> |                 |          |
| - Food Microbiology 1                         | 67h30         | 3h00         | -           | 1h30        | 82h30          | 3         | 6         | 33%             | 67%      |
| - Food biochemistry 1                         | 67h30         | 3h00         | -           | 1h30        | 82h30          | 3         | 6         | 33%             | 67%      |
| - Enzymology                                  | 67h30         | 3h00         | 1h30        |             | 82h30          | 3         | 6         | 33%             | 67%      |
| <b>Methodology TU</b>                         |               |              |             |             |                |           |           |                 |          |
| <b>MTU1 (Obligatory)</b>                      | <b>105h</b>   | <b>4h00</b>  |             | <b>3h00</b> | <b>120 h00</b> | <b>5</b>  | <b>9</b>  |                 |          |
| - Physicochemical analysis methods 1          | 45h00         | 1h30         | -           | 1h30*       | 55h00          | 2         | 4         | 33%             | 67%      |
| - Process control in the Agri-food industries | 45h00         | 1h30         | -           | 1h30*       | 55h00          | 2         | 4         | 33%             | 67%      |
| - Physicochemical properties of food          | 15h00         | 1h00         | -           | -           | 10h00          | 1         | 1         | -               | 100%     |
| <b>Discovery TU</b>                           |               |              |             |             |                |           |           |                 |          |
| <b>DTU1 (Obligatory)</b>                      | <b>45h00</b>  | <b>3h00</b>  |             |             | <b>5h00</b>    | <b>2</b>  | <b>2</b>  |                 |          |
| - Saharan environment                         | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100%     |
| - Ethics and deontology                       | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100%     |
| <b>Transversals TU</b>                        |               |              |             |             |                |           |           |                 |          |
| <b>TTU1 (Obligatory)</b>                      | <b>22h30</b>  | <b>1h30</b>  |             |             | <b>2h30</b>    | <b>1</b>  | <b>1</b>  |                 |          |
| - English for Agronomists (Beginner)          | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100%     |
| <b>Total Semester 1</b>                       | <b>375h</b>   | <b>17h30</b> | <b>1h30</b> | <b>6h00</b> | <b>375h</b>    | <b>17</b> | <b>30</b> | <b>-</b>        | <b>-</b> |

\* PW and/or Visit

## 2- Semester 2:

| Semester 2: 1 <sup>st</sup> year (Cycle 2)                       |               |              |   |             |                |           |           |                 |      |
|------------------------------------------------------------------|---------------|--------------|---|-------------|----------------|-----------|-----------|-----------------|------|
| Teaching Units (TU)                                              | SVH           | V.H Weekly   |   |             |                | Coeff     | Credits   | Evaluation mode |      |
|                                                                  | 14-16 week    | Lecture      | T | PW          | Others         |           |           | CC              | Exam |
| <b>Fundamentals TU</b>                                           |               |              |   |             |                |           |           |                 |      |
| <b>FTU1 (Obligatory)</b>                                         | <b>202h30</b> | <b>7h30</b>  |   | <b>6h00</b> | <b>247h30</b>  | <b>9</b>  | <b>18</b> |                 |      |
| - Food Microbiology 2                                            | 67h30         | 3h00         | - | 1h30        | 82h30          | 3         | 6         | 33%             | 67%  |
| - Food biochemistry 2                                            | 67h30         | 3h00         | - | 1h30        | 82h30          | 3         | 6         | 33%             | 67%  |
| - Enzymatic Engineering                                          | 67h30         | 1h30         | - | 3h00*       | 82h30          | 3         | 6         | 33%             | 67%  |
| <b>Methodology TU</b>                                            |               |              |   |             |                |           |           |                 |      |
| <b>MTU1 (Obligatory)</b>                                         | <b>105h</b>   | <b>4h00</b>  |   | <b>3h00</b> | <b>120 h00</b> | <b>5</b>  | <b>9</b>  |                 |      |
| - Food unitary operation 1                                       | 45h           | 1h30         | - | 1h30*       | 55h00          | 2         | 4         | 33%             | 67%  |
| - Physicochemical analysis methods 2                             | 45h           | 1h30         | - | 1h30*       | 55h00          | 2         | 4         | 33%             | 67%  |
| - Basic industrial equipment                                     | 15h           | 1h00         | - | -           | 10h00          | 1         | 1         | -               | 100% |
| <b>Discovery TU</b>                                              |               |              |   |             |                |           |           |                 |      |
| <b>DTU1 (Obligatory)</b>                                         | <b>45h00</b>  | <b>3h00</b>  |   |             | <b>5h00</b>    | <b>2</b>  | <b>2</b>  |                 |      |
| - Saharan bioresources                                           | 22h30         | 1h30         | - | -           | 2h30           | 1         | 1         | -               | 100% |
| - Fundamentals of Artificial Intelligence applied on Agriculture | 22h30         | 1h30         | - | -           | 2h30           | 1         | 1         | -               | 100% |
| <b>Transversals TU</b>                                           |               |              |   |             |                |           |           |                 |      |
| <b>TTU1 (Obligatory)</b>                                         | <b>22h30</b>  | <b>1h30</b>  |   |             | <b>2h30</b>    | <b>1</b>  | <b>1</b>  |                 |      |
| - English for agronomists (Elementary)                           | 22h30         | 1h30         | - | -           | 2h30           | 1         | 1         | -               | 100% |
| <b>Total Semester 2</b>                                          | <b>375h</b>   | <b>16h00</b> |   | <b>9h00</b> | <b>375h</b>    | <b>17</b> | <b>30</b> |                 |      |

\* PW and/or Visit

### 3- Semester 3:

| Semester 3: 2 <sup>nd</sup> year (Cycle 2)        |               |              |   |              |                |           |           |                 |      |
|---------------------------------------------------|---------------|--------------|---|--------------|----------------|-----------|-----------|-----------------|------|
| Teaching Units (TU)                               | SVH           | V.H Weekly   |   |              |                | Coeff     | Credits   | Evaluation mode |      |
|                                                   | 14-16 week    | Lecture      | T | PW           | Others         |           |           | CC              | Exam |
| <b>Fundamentals TU</b>                            |               |              |   |              |                |           |           |                 |      |
| <b>FTU1 (Obligatory)</b>                          | <b>202h30</b> | <b>7h30</b>  |   | <b>6h00</b>  | <b>247h30</b>  | <b>9</b>  | <b>18</b> |                 |      |
| - Technology of Agro-food industry 1              | 67h30         | 1h30         | - | 3h00*        | 82h30          | 3         | 6         | 33%             | 67%  |
| - Food biotechnology                              | 67h30         | 3h00         | - | 1h30*        | 82h30          | 3         | 6         | 33%             | 67%  |
| - Industrial Microbiology                         | 67h30         | 3h00         | - | 1h30*        | 82h30          | 3         | 6         | 33%             | 67%  |
| <b>Methodology TU</b>                             |               |              |   |              |                |           |           |                 |      |
| <b>MTU1 (Obligatory)</b>                          | <b>105h</b>   | <b>3h00</b>  |   | <b>4h00</b>  | <b>120 h00</b> | <b>5</b>  | <b>9</b>  |                 |      |
| - Advanced Physicochemical Analysis 1             | 45h00         | 1h30         | - | 1h30*        | 55h00          | 2         | 4         | 33%             | 67%  |
| - Food unitary operation 2                        | 45h00         | 1h30         | - | 1h30*        | 55h00          | 2         | 4         | 33%             | 67%  |
| - Food Microbiological analysis                   | 15h00         | -            | - | 1h00         | 10h00          | 1         | 1         | 33%             | 67%  |
| <b>Discovery TU</b>                               |               |              |   |              |                |           |           |                 |      |
| <b>DTU1 (Obligatory)</b>                          | <b>45h00</b>  | <b>3h00</b>  |   |              | <b>5h00</b>    | <b>2</b>  | <b>2</b>  |                 |      |
| - Saharan agriculture and sustainable development | 22h30         | 1h30         | - | -            | 2h30           | 1         | 1         | -               | 100% |
| - Valorization of Saharan bioresources            | 22h30         | 1h30         | - | -            | 2h30           | 1         | 1         | -               | 100% |
| <b>Transversals TU</b>                            |               |              |   |              |                |           |           |                 |      |
| <b>TTU1 (Obligatory)</b>                          | <b>22h30</b>  | <b>1h30</b>  |   |              | <b>2h30</b>    | <b>1</b>  | <b>1</b>  |                 |      |
| - Biodiversity                                    | 22h30         | 1h30         | - | -            | 2h30           | 1         | 1         | -               | 100% |
| <b>Total Semester 3</b>                           | <b>375h</b>   | <b>15h00</b> |   | <b>10h00</b> | <b>375h</b>    | <b>17</b> | <b>30</b> |                 |      |

\* PW and/or Visit

#### 4- Semester 4:

| Semester 4: 2 <sup>nd</sup> year (Cycle 2)  |               |              |             |             |                |           |           |                 |      |
|---------------------------------------------|---------------|--------------|-------------|-------------|----------------|-----------|-----------|-----------------|------|
| Teaching Units (TU)                         | SVH           | V.H Weekly   |             |             |                | Coeff     | Credits   | Evaluation mode |      |
|                                             | 14-16 week    | Lecture      | T           | PW          | Others         |           |           | CC              | Exam |
| <b>Fundamentals TU</b>                      |               |              |             |             |                |           |           |                 |      |
| <b>FTU1 (Obligatory)</b>                    | <b>202h30</b> | <b>4h30</b>  | <b>1h30</b> | <b>7h30</b> | <b>247h30</b>  | <b>9</b>  | <b>18</b> |                 |      |
| - Technology of Agro-food industry 2        | 67h30         | 1h30         | -           | 3h00*       | 82h30          | 3         | 6         | 33%             | 67%  |
| - Food toxicology                           | 67h30         | 1h30         | 1h30        | 1h30*       | 82h30          | 3         | 6         | 33%             | 67%  |
| - Valorization of biomolecules              | 67h30         | 1h30         | -           | 3h00*       | 82h30          | 3         | 6         | 33%             | 67%  |
| <b>Methodology TU</b>                       |               |              |             |             |                |           |           |                 |      |
| <b>MTU1 (Obligatory)</b>                    | <b>105h</b>   | <b>4h00</b>  | <b>1h30</b> | <b>1h30</b> | <b>120 h00</b> | <b>5</b>  | <b>9</b>  |                 |      |
| - Advanced Physicochemical Analysis 2       | 45h           | 1h30         | -           | 1h30        | 55h00          | 2         | 4         | 33%             | 67%  |
| - Applied biostatistics                     | 45h           | 1h30         | 1h30        | -           | 55h00          | 2         | 4         | 33%             | 67%  |
| - Industrial Hygiene and Safety             | 15h           | 1h00         | -           | -           | 10h00          | 1         | 1         | -               | 100% |
| <b>Discovery TU</b>                         |               |              |             |             |                |           |           |                 |      |
| <b>DTU1 (Obligatory)</b>                    | <b>45h</b>    | <b>3h00</b>  |             |             | <b>5h00</b>    | <b>2</b>  | <b>2</b>  |                 |      |
| - Agricultural economics.                   | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100% |
| - Regulatory qualities of agrifood products | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100% |
| <b>Transversals TU</b>                      |               |              |             |             |                |           |           |                 |      |
| <b>TTU1 (Obligatory)</b>                    | <b>22h30</b>  | <b>1h30</b>  |             |             | <b>2h30</b>    | <b>1</b>  | <b>1</b>  |                 |      |
| - Business management and knowledge         | 22h30         | 1h30         | -           | -           | 2h30           | 1         | 1         | -               | 100% |
| <b>Total Semester 4</b>                     | <b>375h</b>   | <b>13h00</b> | <b>3h00</b> | <b>9h00</b> | <b>375h</b>    | <b>17</b> | <b>30</b> |                 |      |

\* PW and/or Visit

## 5- Semester 5:

| Semester 5: 3 <sup>rd</sup> (Cycle 2) |               |              |   |              |                |           |           |                 |      |
|---------------------------------------|---------------|--------------|---|--------------|----------------|-----------|-----------|-----------------|------|
| Teaching Units (TU)                   | SVH           | V.H Weekly   |   |              |                | Coeff     | Credits   | Evaluation mode |      |
|                                       | 14-16 week    | Lecture      | T | PW           | Others         |           |           | CC              | Exam |
| <b>Fundamentals TU</b>                |               |              |   |              |                |           |           |                 |      |
| <b>FTU1 (Obligatory)</b>              | <b>202h30</b> | <b>6h00</b>  |   | <b>7h30</b>  | <b>247h30</b>  | <b>9</b>  | <b>18</b> |                 |      |
| - Quality control and food analysis   | 67h30         | 1h30         | - | 3h00*        | 82h30          | 3         | 6         | 33%             | 67%  |
| - Food formulations and regulatory    | 67h30         | 3h00         | - | 1h30         | 82h30          | 3         | 6         | 33%             | 67%  |
| - Water and waste treatment           | 67h30         | 1h30         | - | 3h00*        | 82h30          | 3         | 6         | 33%             | 67%  |
| <b>Methodology TU</b>                 |               |              |   |              |                |           |           |                 |      |
| <b>MTU1 (Obligatory)</b>              | <b>105h00</b> | <b>4h00</b>  |   | <b>3h00</b>  | <b>120 h00</b> | <b>5</b>  | <b>9</b>  |                 |      |
| - Sensorial analysis                  | 45h00         | 1h30         | - | 1h30*        | 55h00          | 2         | 4         | 33%             | 67%  |
| - Food conservation and packaging     | 45h00         | 1h30         | - | 1h30*        | 55h00          | 2         | 4         | 33%             | 67%  |
| - Nutrition and health                | 15h00         | 1h00         | - | -            | 10h00          | 1         | 1         | -               | 100% |
| <b>Discovery TU</b>                   |               |              |   |              |                |           |           |                 |      |
| <b>DTU1 (Obligatory)</b>              | <b>45h00</b>  | <b>3h00</b>  | - | -            | <b>5h00</b>    | <b>2</b>  | <b>2</b>  |                 |      |
| - Marketing et entrepreneurial        | 22h30         | 1h30         |   | -            | 2h30           | 1         | 1         | -               | 100% |
| - Introduction to research projects   | 22h30         | 1h30         |   |              | 2h30           | 1         | 1         | -               | 100% |
| <b>Transversals TU</b>                |               |              |   |              |                |           |           |                 |      |
| <b>TTU1 (Obligatory)</b>              | <b>22h30</b>  | <b>1h30</b>  |   |              | <b>2h30</b>    | <b>1</b>  | <b>1</b>  |                 |      |
| - Legislation and repression of Fraud | 22h30         | 1h30         | - | -            | 2h30           | 1         | 1         | -               | 100% |
| <b>Total Semester 5</b>               | <b>375h</b>   | <b>14h30</b> | - | <b>10h30</b> | <b>375h</b>    | <b>17</b> | <b>30</b> |                 |      |

\* TP et/ ou sorties

## 6- Semester 6: 3<sup>rd</sup> year (Cycle 2)

**Domain: Natural and Life Sciences**

**Sector: Agricultural Sciences**

**Specialty: Technology of Agri-food Industry**

Internship in an industrial company leading to a thesis defense.

|                               | SVH    | Coeff | Credits |
|-------------------------------|--------|-------|---------|
| <b>Personnel Word</b>         | 375h00 | 9     | 15      |
| <b>Industrial internship</b>  | 360h00 | 5     | 12      |
| <b>Conference</b>             | 12h00  | 2     | 2       |
| <b>Other (Thesis defense)</b> | 3h00   | 1     | 1       |
| <b>Total Semester 6</b>       | 750h00 | 17    | 30      |

**7- Overall summary of the training:** (indicate the overall separate Hourly Volume of: Lectures, T and PW, for the 06 semesters of teaching, for the different types of TU).

| TU Hourly Volume                     | FTU     | MTU    | DTU   | TTU   | Total      |
|--------------------------------------|---------|--------|-------|-------|------------|
| <b>Lecture</b>                       | 34h30   | 19h00  | 15h00 | 7h30  | 76h00      |
| <b>T</b>                             | 3h00    | 1h30   | -     | -     | 4h30       |
| <b>Practical Work</b>                | 30h00   | 14h30  | -     | -     | 44h30      |
| <b>Personnel work</b>                | 1237h30 | 600h00 | 25h00 | 10h00 | 1872h30    |
| <b>Other (internship and thesis)</b> | 375h00  | 360h00 | 12h00 | 3h00  | 750h00     |
| <b>Total</b>                         | 2055h00 | 995h00 | 41h30 | 19h00 | 3110h30    |
| <b>Credits</b>                       | 105     | 57     | 12    | 6     | <b>180</b> |
| <b>% in credits for each TU</b>      | 58,33%  | 31,67% | 6,67% | 3,33% |            |