

COURSE CODE:	FIS409
COURSE TITLE:	Fish Nutrition
NUMBER OF UNITS:	3 Units
COURSE DURATION:	Three hours per week

COURSE DETAILS:

Course Coordinator:	Dr. S.O.Obasa
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Office Location:	Room D211, COLERM
Other Lecturers:	Dr. (Mrs.) F.O.A. George and Dr. W.O. Alegbeleye

COURSE CONTENT:

Nutrient requirements for fish. Factors affecting nutrient requirements of fish. Chemistry and nutritive values of materials used in fish feed. Feed formulation for fish utilization. General methods of feeding fish. Various fish product development, their economic value and implication.

COURSE REQUIREMENTS:

. This is a compulsory course for all students in Department of Aquaculture & Fisheries Management. In view of this, students are expected to participate in all the course activities and have minimum of 75% attendance to be eligible to write the final examination.

READING LIST:

LECTURE NOTES

Fish products

- a) Food products
- b) Non-food products

Definitions:

Raw material----->Product

Defined Process

Factors to consider in the development of fish products

- i) Consumer needs
- ii) Quality (products should meet desired standards)

iii) Safety

Food products

- Canned fish products, manufacturing;
- Fish and chip dinners, frozen, manufacturing;
- Fish canned, manufacturing;
- Fish cured, manufacturing;
- Fish dinners, pre-cooked, frozen, manufacturing;
- Fish fillets, steaks, blocks, etc., manufacturing;
- Fish roe, processed, manufacturing;
- Fish, chilled or frozen, manufacturing;
- Fish, processed or prepared, manufacturing;
- Fish, salted or dried, manufacturing;
- Fermented fish products
- Lobster, processing;
- Mollusc processing;
- Oyster canning;
- Ready-to-serve frozen fish products, manufacturing;
- Seaweed processing;
- Shellfish canning, manufacturing;
- Shellfish, processed or prepared; and
- Smoked fish, manufacturing

Non-food products:

- Fish liver oil extraction, crude, and manufacturing;
- Fish meal, manufacturing
- Marine animal oil extraction, manufacturing;
- Seaweed processing

Economic value and implications of fish products

1. Feed formulation

i. Definition. Calculation of different ingredients to be mixed together to form a balance ration.

ii. Requirements of feed formulation.

iii. Different methods of feed formulation.

Pearson's square

Least cost and

Algebraic.

Example 1.

Using the Pearson's square method, formulate a ration (100 kg) containing 30% crude protein (CP), using fish meal (72% CP) and maize, (10%CP). Calculate each ingredient contribution by weight and by protein.

$$\frac{72 - 30}{72 - 10} \times 100 = 32.26$$

62

30

42

$$\frac{30 - 10}{72 - 10} \times 100 = 67.74$$

62

Contribution of fish meal by weight = 32.26

Contribution of maize by weight = 67.74

—————
Total = 100.0

“ “ fish meal by protein = $32.26/100 \times 72 = 23.23$

“ “ maize “ “ = $67.74/100 \times 10 = 6.77$

—————

Total = 30.00 %

Example 2

Formulate a ration containing 30% CP using fish meal (72%CP), soybean meal (43%CP) in the ratio 1:2. Use maize (10%CP) as energy source..

(Ratios are assigned when using more than one source of nutrient).

Fish meal 72% CP Ratio 1 $1 \times 72 = 72$

Soybean meal 43%CP Ratio 2 $2 \times 43 = 86$

—————
 $3 \ 158/3 = 52.67$

$52.67 \ 20/42.67 \times 100 = 46.87$

30

$10 \ 22.67/42.67 \times 100 = 53.13$

Protein sources contribution by weight = 46.87

Individual source = $46.87/3 = 15.62$

Fish meal = $15.62 \times 1 = 15.67$

Soybean meal = $15.62 \times 2 = 31.24$

Maize = 53.13

Contribution by protein:

Fish meal = $15.62/100 \times 72 = 11.25$

Soybean meal = $31.24 \times 43 = 13.43$

Maize = $53.13/100 \times 10 = 5.31$

Total = _____

29.99 or 30.00%.

3. Different methods of feeding.

1. Point/spot feeding.

This is when feed is dispensed to fish at a point or spot in the culture system.

Advantages and disadvantages

2, Broadcast feeding.

This is when feed is dispensed to fish by spreading or broadcasting in the culture system.

Advantages and disadvantages.

2. Mechanical feeding

Feeding equipments

Stationary feeding equipment e. g. Demand feeder

Mobile feeding equipment e. g. Automatic feeder.

Mode of feeding

1. Feeding at percentage body weight.

2. Feeding to satiation.