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Second Meeting of Directors of Centres Participating
in the Statistical Training Programme for Africa (STPA)

Addis Ababa, 2-6 November 1981

Guide syllabus for the training of
middle-level statistical personnel
in French-speaking African countries

- Adjoints Techniques
- Agents techniques

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Introduction

This guide syllabus for the training of middle-level personnel in the centres participating in the Statistical Training Programme for Africa is a result of the study of programmes available in the Statistics Division at ECA headquarters and of the mission undertaken to the Abidjan and Yaoundé centres and to the statistical offices of user countries in June 1981.

The author's previous experience as a trainer and user was taken into account.

The objectives of this guide syllabus are to foster the development of both students with an excellent aptitude for mathematics and those with a practical turn of mind:

- To prepare well informed statistical workers to work closely as early as possible with the ingénieurs d'application and ingénieurs des travaux in various areas of data processing;

- To train efficient and productive administrators who are capable of heading a team, especially in countries with few statisticians;

- To permit students with the necessary capacity to sit entrance examinations for the higher division, if they are so authorized by their Governments.

Training in the STPA centres will consist of theoretical courses, supervised work, practical applications and the on going assessment of skills.

The training of adjoints techniques will last two years and that of agents techniques one academic year. At the end of each year an internship will take place.

Standardization of the terminology used in teaching will facilitate both the analysis of content and comparisons. It was considered that the expression "Mathematical statistics" should be reserved for the training of ingenieurs.

Each course will constitute a separate module. The different modules are divided into five chapters:

	Total number of hours ^{1/}	
	Adjoints techniques	Agents techniques
I. General studies including mathematics	330	180
II. Basic statistics	305	135
III. Economics and data processing	250	45
IV. Applied statistics	190	150
V. Practical application	200	160
Total	1,275	670

^{1/} Average profile.

Such a well structured programme will clarify the objectives of training. It can be helpful in seeking internships and even in leading to recruitment offers from public, parastatal and private sectors. A suggested bibliography in French is attached as an annex.

GUIDE SYLLABUS

1. Summary presentation

Chapters	Adjoints first year	Adjoints second year	Agents
I. GENERAL STUDIES	Mathematics	Mathematics	Mathematics
	Numerical computation	English	Numerical computation
	French		French
	English		English
	Economic geography		Economic geography
II. BASIC STATISTICS	Statistical Organization and preparation	Statistical analysis	Statistical preparation
	Descriptive statistics	Survey theory and practice	Descriptive statistics
	Introduction to statistical analysis		
III. ECONOMICS AND DATA PROCESSING	Notions of civil and commercial law	National accounts	Business accounting
	Business accounting	Development and planning	Economics
	Economics	Computer programming	National accounts
	General data processing		General data processing

1. Summary presentation (continued)

Chapters	Adjoints first year	Adjoints second year	Agents
IV. APPLIED STATISTICS	Demography	External trade	Demography
	Labour statistics	Industrial statistics	External trade
	Price statistics	Transport statistics	Price statistics
		Agricultural statistics	Industrial statistics
		Public finance and accounting	Labour statistics
			Agricultural statistics
			Transport statistics
			Public finance and accounting
V. PRACTICAL APPLICATION	One-month internship to begin on 1 September	Two-months end-of-term-internship to begin on 18 April	One-month internship to begin on 18 May

Note: Physical education, which is sometimes included in the syllabus of the centres, is not mentioned here. Nevertheless, the consultant considers it necessary one afternoon per week.

GUIDE SYLLABUS

2. Detailed presentation

A. ADJOINTS TECHNIQUES FIRST YEAR

I. General studies

1. MATHEMATICS

Sets

Definitions: Sub sets, empty sets, complementary sets

Relations: Cartesian product of two sets, relations of equivalence, relations of order

Applications and functions

Algebraic structures

Natural whole numbers

Relative whole numbers

Rational numbers

Real numbers

Equations and inequalities (review)

Changes of unknowns, graphic presentation

First degree equations, second degree equations and inequalities

Biquadratic equations

Examples of irrational equations and inequalities

Numerical functions

General

Representation on an orthonormal base

Limits and continuity

Derivation: Definition of a derivative, calculation of derivatives, notion of differentials, derivative of a function, Rolle's theorem, Taylor and MAC LAURIN formulae

Applications of derivation: Variations of functions, examples of studies of functions

Integration

Integral definition of a Riemann function

Primitives: existence, calculation

Definite and indefinite integrals

Logarithmic functions

Definition of $\log x$, formulae

Logarithms with base a , base change, calculations

Exponential functions

Exponential functions with base e , with any base

Study of e^x , e^{-x} , a^x

2. NUMERICAL COMPUTATION

Use of the sum symbol:

Practice in rapid computation, computation tables

Progressions

Errors and uncertainties: definitions, theorems

Use of value tables

Linear interpolation

3. FRENCH

Comprehension of topical economic or social texts

Note-taking, writing of summaries and comments

Text analysis, titling

Vocabulary building

Expression

Administrative drafting, style, reports, instructions

Increased readability, index

Practice in oral presentations of selected topics

4. ENGLISH

Study of texts to learn idiomatic terms and expressions

Translation of economic and social texts

Vocabulary building

5. ECONOMIC GEOGRAPHY

Major world commodities: production, export

Agricultural production: groundnuts, wheat, cocoa, coffee, cotton, sugar, oils, wood

Ores and raw materials: aluminium, copper, tin, magnesium, zinc, iron and steel

Energy products: coal, electricity, natural gas, petroleum

World international traffic: major sea routes, air routes; intercountry links: roads and railways

Economic groupings: outside Africa, in Africa

II. Basic statistics

1. STATISTICAL ORGANIZATION AND PREPARATION

General, definitions, origin and development of statistics

Statistical sets and units, characteristics, modalities, discrete variables, continuous variables

Statistical organization, geographical centralization and decentralization, distributive statistics

Internal structure of a statistical office and upgrading of tasks: filing, confidential information, information links

Collection of information

Indirect collection of information of administrative or quasi-public relationship with the statistical office

Direct collection: exhaustive or partial, ongoing or periodic

Determination of objectives, means

Source document: preparation, upgrading

Choice and training of enumerators

Organization of a census, survey, controls

Data processing

Filing, codes, nomenclature

Coding, data input, data processing

Files and identifiers, significant and non-significant

2. DESCRIPTIVE STATISTICS

Classification of data, review of basic concepts

Basic properties of modalities

Counting modes, notion of level or stocks, notion of flow

Statistical distribution with one characteristic

Statistical tables: numbers, frequencies, cumulative chart, classes, limits and centres of classes

Graphic presentation of functions:

Bar and step charts

Histograms and cumulative frequency curves

Pictograms and other charts

Central trend characteristics

Yule regulations: mode, median, averages

Dispersion parameters: interval, absolute average deviation, variance, standard deviation, quantiles, interquartile range, relative interquartile coefficient, variation coefficient

Other characteristics: form, concentration, concentration index, mean

Statistical distribution with two characteristics

Notion of correlation

Statistical tables: marginal or conditional distribution

Graphs: scatter diagrams, regression curves

Linear regression

Introduction, analytical determination, regression line (Mayer), least squares method, progressive averages, moving averages

Chronological series

Definition, graphic, presentation, components

Study of a time series: trend, seasonal coefficients, seasonal adjustment

Indices

Elementary indices: definition, properties

Synthetic indices: introduction, construction

Weighting coefficients

Laspeyre's index, Paasche's formula

Chain indices

Practical problems: price indices, quantity indices, choice and calculation of weights

3. INTRODUCTION TO STATISTICAL ANALYSIS

Combinatorial analysis: reasonings, arrangements, permutations, combinations

Binomial formula, Pascal's triangle

Notions of probability:

Simple events, compound events

Independent, exclusive, equiprobable events

Probability drawing

Random variables: definition, distribution function, probability law, probability density function

Theoretical distribution: binomial law, normal law, reduced normal law, Poisson normal log

Adjustment: general principles

III. Economics and data processing

1. NOTIONS OF CIVIL LAW AND COMMERCIAL LAW

General introduction

Legal subjects: notion of body corporate, disabilities, the law and one's rights classifications of property:

Contracts

Trade: trade instruments and tradesmen

Commercial activity and competition: commercial enterprises; legal categories, trade register; businesses

Obligations and rights of commercial enterprises

Negotiable instruments, means of settlement, trade contracts

Bankruptcy, liquidation of goods, legal settlement, dissolution of a company

2. BUSINESS ACCOUNTING

Business as an economic agent: resources, jobs, external flows, internal flows, operating cycle

Accounts: definitions, registration regulations, double entry

Account plan: introduction, major categories and accounts

OCAM plan: situation and movement accounts

Accounting operations at the end of the financial year

Operating account: preparation, profits and losses, results

Balance sheet

Management analysis: ratios, costs, cost prices, fixed charges, variables

3. ECONOMICS

Definition and purpose of economics, evolution, methods and instruments of economic analysis

Generalities: economic cycles, instruments, agents, operations, sectors of activity

The two major contemporary economic systems

Production: enterprises, types, concentration, integration, production factors and costs, supply curves

Domestic production

Consumption: consumer behaviour, consumption and savings, diseconomies, propensity to consume the function of consumption

Trade and the determination of prices

Various types of markets, supply and demand

Price formation, elasticity, competition, monopoly

Currency and credit: functions, current forms

Money supply, quasi-money, conditions of issue, speed of circulation, types of credit

Monetary policy; IMF

Introduction to international trade

Its role, balance of payments, problem of exchange

National and international policies

Introduction and role of country groupings and international bodies

4. GENERAL DATA PROCESSING

This course is aimed at providing a common language and fostering dialogue among computer specialists.

Generalities: data processing, definitions:

Data, logical record, physical record, files, data bank

Data problems: format, entry

Errors and verification, machine processing, confidentiality

Data carriers

Review of numeration systems: binary numbers

Hard ware: the computer

Central memory, logical unit, arithmetic unit

Input, output and storage peripherals

Files: characteristics, structures, organization and addressing

Development of computer generations

Operating modes: batch processing, real time, teleprocessing

Software

Computer management system

Programming languages, objective, instruction, high-level languages
machine languages, assembler

Organizational charts, programming

Controls in a data processing system

At the time of information input, accounting controls, tables;
verification of results

Organization of a data processing centre (DPC)

Various units, functions

Visit of a DPC

IV. Applied statistics

1. DEMOGRAPHY

General: definitions, purpose of demography, situation of the world population and the African population

Status of the population

Categories: de jure or resident population, actual population, institutional population, concentrated population, sparsely settled population, urban population, rural population

Structure: according to sex, age, the age pyramid, marital status, individual activities, economic sector, level of instruction, nationality, religion, ethnic group

Natural movement: general, births, deaths

Vital statistics: registration, principle of mobile civil registration

Impact of migratory movements: international migrations, internal migrations, seasonal migrations, definitive migrations, border migrations

Demographic analysis

Rates: population density, birth rate, fertility rate, mortality quotient and rate, stillbirths, infant mortality

Notions of mortality tables, life expectancy

Lexis diagram

Natural growth rate, demographic projections

Difficulties in demographic studies, methods used

Improvement of administrative censuses

Censuses and surveys of statistical offices, approaches, personnel training, controls

2. LABOUR STATISTICS

Basic concepts: individual and collective activity, situation in the profession, major nomenclatures

Working population: definition, distribution, activity rate

Idle population: distribution

Study of employment: sources of data, working life, job supply and demand, number of workers, employment index, length of work, activity index

Specific surveys

Underemployment, unemployment

Wages: components, rates, wage earners, distribution, labour costs

Revenues from social benefits: family allowances, work-related sickness and accident payments, retirement pensions

3. PRICE STATISTICS

Movements of specific and general prices

Role of price statistics: definitions, characteristics of price, legal system,

Different stages of pricing: import, ex works, wholesale, retail

Price observation: methods used according to type of product, purchasing and weighing system, difficulties, outlets and frequency of collection,

Use of data

Chronological indices, base period, weighting

Indices for geographical comparison

Scope and use of price indices

Index adjustments, adjustment coefficients

Family budget surveys

Objectives, implementation, utilization

V. Practical application

The internship is planned for students entering the second year. Its purpose is to introduce students to problems of statistical production.

Duration: four weeks

Date: 1 to 30 September

B: ADJOINTS TECHNIQUES SECOND YEAR

I. General studies

1. MATHEMATICS

Review of first year courses

Integral calculus, integration by parts, by substitution, primitives, functions of e^x , $\log x$, x^m , continuous functions

Complex numbers

Numerical sequences and series

Normal convergence criteria

Comparison with an integral

Circular functions, hyperbolic functions

Principles of numeration systems: notions of base

systems with base 10, with base N (especially 2, 8, 16)

System changes

Introduction to linear algebra

Vector spaces, vector subspaces

Intersection, junction

Linear applications

2. ENGLISH

See first year programme

II. Basic statistics

1. STATISTICAL ANALYSIS

Supplements to the first year course

Combinatorial analysis

Random variables: types, usual characteristics

Usual laws

Problems of adjusting a theoretical law to an observed law

Sampling problems

Sampling with and without replacement

Empirical average and variance of a sample

Random number tables, uses

Point estimation and estimation by confidence interval

Comparison of parameters, hypothesis tests

Use of arithmetic and logarithmic probability paper

2. THEORY AND PRACTICE OF SAMPLING

Basic concepts: Sampling units, sampling bases; random sampling, sampling by purposive selection

Sampling methods

One degree, different drawing methods

Several degrees

Use of random number tables

Estimation of the characteristics of the population on the basis of a sample - average, variance

Accuracy and costs

III. Economics and data processing

1. NATIONAL ACCOUNTS

General: definition, nature, background

Basic notions:

Production, intermediate goods, end goods

Value added, global production and products, notions of gross and net, national and domestic, evaluation at market prices and factor costs

Use of the global product; consumption and capital formation,
fixed capital and stocks; production financing

Characteristics of a national accounting system

Transactors and transactor units

Types of economic activity and transaction accounts

Standard accounts, relationships between elements, definition of
aggregates, definition of principal flows

Over-all economic table

Interindustry trade table

2. DEVELOPMENT AND PLANNING

Definitions and characteristics of underdevelopment, indicators

Internal and external constraints to economic development

Interventions for harmonized development

Introduction to planning, definition, various types

Nature, stages, general planning framework

Control of implementation of the Plan

Planning in capitalist countries

Planning in Socialist countries

3. COMPUTER PROGRAMMING

Organizational charts, review of first year courses

Logic of programming

Programme users

Definition, introduction to programming

abacus - first exercises

High-level languages (COBOL - FORTRAN)

Theoretical study

Concrete applications

Students are divided into groups of two or three with each student writing a programme for the machine processing of the example being studied. Such an application requires a single prior investment, as the same example can be used several years in a row. Example: the salary of interviewers in an agricultural survey or, better still, calculation of the price index referred to in recommendation III-C, 3 of the mission report.

IV. Applied statistics

1. EXTERNAL TRADE

Defintion: nature of external trade statistics

Concepts: Customs areas, country of origin, last country of export, consumption, destination, sales, categories of traffic, general trade, special trade

Customs declarations: values, weights, statistical quantities

Nomenclatures: products, countries, international accounting

Means of preparing external trade statistics; interpretation of results, coverage rates, balance of trade

Indices: volume index and correction, total values, unit value

Terms of trade

2. INDUSTRIAL STATISTICS

Introduction: Nature of industrial statistics

Scope - International Standard Industrial Classification of All Economic Activities

Statistical units: establishment, enterprise, groups

Files and updating of files

Data collection and sources of information

Data to be collected

Industrial production index, labour productivity

3. TRANSPORT STATISTICS

Nature of transport statistics, methods, data sources, technical statistics, economic statistics

Traffic analysis: travellers, goods, service, loading, unloading, transit

Filling coefficients, utilization coefficients

Air transport, domestic traffic, international traffic

Maritime transport, long-haul vessels, coastal vessels

River navigation, local traffic, transit, exports, imports

Rail transport, passenger traffic, goods, rolling stock, stations, equipment

Road transport: vehicles, files and new registrations, consumption

Surveys on road traffic

Evaluation of infrastructure, fixed capital formation

4. AGRICULTURAL STATISTICS

The particularities of agricultural production, the calendar

Scope of agricultural statistics, definitions and concepts:

Agricultural population, farming, land development,
cultivated surfaces, livestock, means of production

Current statistics: areas, yield, production, prices

Collection of information: censuses, sample surveys, density squares,
maps, aerial photographs, measuring instruments, controls

Difficulties of agricultural surveys

5. PUBLIC FINANCE AND ACCOUNTING

Review of national accounts: economic co-operation, transactors

Definition of the state sector: central government, local government

Public bodies, public establishments

Extrabudgetary accounts

General government budget: functioning, equipment, budgetary

Regulations

Public expenditures: definitions, classifications

Public resources: taxes, treasury

Financial institutions: the Central Bank, deposit and development
banks, postal cheques, savings banks

Data to be collected for each of these institutions

IV. Practical application

End of studies internship

Duration: two months

Date: from 18 April

At the end of the internship, each student must submit a report
on the organization and functions of the host department, work done and
difficulties encountered.

The internship report, and the attendance and behaviour of students
will be assigned a grade, which will be taken into account in awarding the
school's diploma.

C. AGENTS TECHNIQUES

I. General studies

1. MATHEMATICS

Sets, general notions

Language of sets, binary relations, laws of internal and external composition - structures

Linear algebra, notion of vector space

Real vector space, linear applications

Numerical functions

Representation on an orthonormal base, co-ordinate transformation

Area of definition, study of variations of functions

Notions of continuity and limit

Derivative, calculation of derivatives, geometric interpretation

Study and graphic presentation of functions:

$ax + b$; $|ax + b|$; $ax^2 + bx + c$; x^2 ; $\frac{a}{x}$; $\frac{ax + b}{cx + d}$

Equations and inequalities

First degree with one or two unknowns, equation and inequality systems

Second degree equations with one unknown

Notions of trigonometry

2. NUMERICAL COMPUTATION

Practice in rapid computation: The four rules, square roots, averages, rates

Errors and uncertainties: definitions, general theorems

Arithmetic progressions, geometric progressions

Compound interest and annuities

Decimal logarithms, use of tables

3. FRENCH

Study of topical economic and social texts to increase vocabulary

Written and oral explication and commentary on texts, reports, summaries

Introduction to administrative drafting

Correspondence, vocabulary, style

4. ENGLISH

Study of texts to teach idiomatic terms and expressions

Translation of economic and statistical texts

5. ECONOMIC GEOGRAPHY

Notions of physical geography

African economic geography

Major groups and their economy: production, marketing

Major products: presented by groups or individuals

II. Basic statistics

1. STATISTICAL PREPARATION

General: definitions, nature, field of application

Statistical sets and units, descriptive and numerical characteristics, modalities, discrete, continuous variables

Statistical organization

Structure of a statistical office, distribution of tasks

Geographical decentralization in ministries

Organization of surveys and censuses

Connexions with the computer centre

Collection of information

Indirect collection, data collected from other departments

Direct collection, exhaustive censuses and purposive selection or sample surveys, sampling bases, sampling units, drawing of samples

Continuous, periodic surveys

Drafting of questions and format of questionnaires

Training of interviewers

Information processing

Coding, checking, filing, use of codes and nomenclatures

Data entry

Files and identifiers

2. DESCRIPTIVE STATISTICS

Presentation of results

Statistical distribution with one characteristic

Statistical tables: numbers and frequencies, cumulative numbers and frequencies

Graphic presentations: integral and differential diagrammes for a discrete variable, for a continuous variable

Other charts: band charts, pie charts, figurative charts

Characteristics of central trend, arithmetic average, geometric average, harmonic mean, mode, mean median

Dispersion parameters, scope, average absolute deviation, variance, standard deviation, quartiles, interquartile range

Statistical distribution with two characteristics

Statistical tables

Graphic presentations

Adjustments: graphic methods, moving averages

Time series, definitions

Graphic presentations

Seasonal variations, long-term movement

Indices

Elementary indices

Synthetic indices, weighting

Laspeyre's index, Paasche's formula

III. Economics and computer sciences

1. Business accounting

General notions

Accounting mechanisms

Accounting obligations

Accounting systems

OCAM account plan

Accounting analysis, balance sheet, operating accounts

2. GENERAL ECONOMICS

Basic notions

Production

Currency and credit

Markets and prices

Government

Over-all economic activity

3. NATIONAL ACCOUNTS

Concepts and definitions of national accounts

Branches of activity: production, factors of production

Notions of intermediate goods, end goods, value added, gross production, net production, national and domestic production, evaluation of market prices, evaluation of factor costs, evaluation in current and constant

Transactors and transaction units, operating accounts

Principal aggregates

Resource balance: uses, over-all economic table

4. GENERAL COMPUTER PROCESSING

This module will consist of a simplified presentation of the corresponding module in the curriculum for the adjoints techniques first year.

IV. Applied statistics

1. DEMOGRAPHY

Definition and purpose of demography

World population

Status of the population, its distribution, categories of population

Natural movement

Birth, birth rates, fertility

Mortality, mortality rates, stillbirths, infant mortality

Natural growth rate

Vital statistics

Migratory movements

Difficulties of demographic observation in Africa: censuses, surveys organization, controls, interviewers, questionnaires, sampling

2. EXTERNAL TRADE

Definition, subject of external trade statistics

Basic concepts: customs declaration: quantities and values

Nomenclatures

Method of formulating statistics

Presentation of results

External trade indices

3. PRICE STATISTICS

Definitions, price characteristics

Price observation, methods, types of products, purchases and weights, outlets and frequency of collection

Use of price data, indices

Determination of weights

4. INDUSTRIAL STATISTICS

Introduction, scope of industrial statistics

Classification of branches of economic activity

Statistical units: establishment, enterprise, group, unit surveyed

Files

Data collection methods, categories of data to be collected

Industrial production index, weights

5. LABOUR STATISTICS

Working population: definition, distribution

Idle population: composition

Nomenclatures

Study of employment: supply and demand, number of workers

Employment index: sources of information and surveys

Unemployment, observation

Wages and wage benefits

6. AGRICULTURAL STATISTICS

Scope of agricultural statistics

Basic statistics and concepts

Current statistics: areas, yields, production prices

Collection of information: difficulties, censuses, surveys, samples, density squares

Use of maps and aerial photographs

Questionnaires equipment, measurements, controls

7. TRANSPORT STATISTICS

This module will consist of a simplified presentation of the corresponding module for the adjoints techniques second year.

8. PUBLIC FINANCE AND ACCOUNTING

This module will consist of a simplified presentation of the corresponding module for the adjoints techniques second year.

V. Practical application

Internship

Duration : four weeks

Date : from 18 May

The agents techniques students will be assigned to statistical offices or will participate in field activities organized by the permanent professors of the centre.

Their work will be assessed by persons responsible for the internship. The students are to prepare a report, the quality of which will be taken into account in awarding diplomas.

Note: A bibliography in French is attached as an annex.

BIBLIOGRAPHIE PROPOSEE
POUR LE PROGRAMME-TYPE DES ENSEIGNEMENTS

MATHEMATIQUE

Adjoints techniques

- Collection Queysanne-Revuz - chez Fernand NATHAN
Tome 1 : Nombres, probabilités, géométrie, Terminale D
Tome 2 : Analyse, Terminales C, D, E
- Editions GAMMA Terminales C et D
- Monge, Audoin Egoroff, Hautcoeur-Tardieu, chez Belin Terminale D
- Exercices et problèmes résolus par M. Gourion et Lixi, Terminales C et E

Agents techniques

- Collection P. Vissio, chez Delagrave, classes de seconde CDT
- Edition GAMMA, classe de seconde C et D

FRANCAIS

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- Explication d'un texte économique de P. Salles, **chez DUNOD**
- Dictionnaire du vocabulaire essentiel, de G. MATORE
- Les secrets de la communication efficace, de F. RICHAUDEAU - C.E.P.L. 1975

ANGLAIS

- L'Anglais économique et commercial
10-18 - Union générale d'éditions Paris 6
- Effective English - Students Book 1
M. Montgomery with J.O. Bisong, R.E. Morakynio - chez EVANS

STATISTIQUE

- Statistique descriptive de J. LE CAILLON et C. LABROUSSE - chez CUJAS
- Cours de statistique (Statistique descriptive) de P. FACE - chez LICET
- Statistique descriptive, Tomes, 1, 2 et 3 de B. GRAIS - chez DUNOD
- Les indices statistiques de J. FOURASTIE - chez DUNOD
- Probabilités et statistique, terminales C,D,E de RICHE - chez HATIER
- Statistique - Exercices corrigés avec rappels de cours
Tomes 1, 2 et 3 de C. LABROUSSE - chez DUNOD
- Statistique - Introduction destinée aux étudiants du 1er cycle de
l'enseignement supérieur - de H. GUITTON - chez DALLOZ
- Mathématique et statistique - classe de 1ère B de CLUZEL et VISSIO
chez DELAGRAVE

DROIT CIVIL ET DROIT COMMERCIAL

- Droit civil- droit public - cours et travaux dirigés
Enseignement technique supérieur de A. GIMALAC - Collections DIA/Diffusion
BELIN
- Cours de droit civil - tome 1, de M. DE JUGIART - chez Ed. MONTCHRESTIEN
- Droit civil - Lycées techniques, classes de 1ère de GRILLON et TREMEAU -
chez FOUCHER
- Droit commercial - chez DALLOZ
 - Précis DALLOZ de R. HOUIN et M. PEDAMON
 - Précis DALLOZ de R. RODIERE et B. OPPETIT

COMPTABILITE D'ENTREPRISE

- Plan comptable OCAM - Méthodes et techniques comptables
Tomes 1, 2, et 3 de ROSSIGNOL, PROST, BREUIL - chez FOUCHER
- Comptabilité privée - Mémentos DALLOZ
de B. JADAUD et S. PASSERON - chez DALLOZ

ECONOMIE

- Initiation aux sciences économiques - Tomes 1 et 2
de J. RINAUDO et R. COSTE - chez NATHAN
- Les Rouages de l'économie nationale
de J.M. ALBERTINI - chez Editions Ouvrières
- Initiation économique et sociale - Tomes 1 et 2
de P. SALLES - chez DUNOD ECONOMIE
- Economie générale - Tome 1 classe de lère G et terminale H
de M. Marchesnay - chez ISTRAN
- Macroéconomie - Tomes 1 et 2
de B. BERNIER et Y. SIMON - chez DUNOD ECONOMIE

COMPTABILITE NATIONALE

- Comptabilité d'entreprise et comptabilité nationale
de Jean MEYER - chez DUNOD
- Initiation à la comptabilité nationale
Ministère de la coopération - France

INFORMATIQUE

- Principes des ordinateurs de P. de MIRIBEL - chez DUNOD
- L'informatique appliquée à la comptabilité et à la gestion
de R. REIX - chez FOUCHER
- FORTRAN IV - de DREYFUS - chez DUNOD
- Le langage BASIC de B. DRIEUX et A.L. LISU - chez P.U.F.

DEVELOPPEMENT ET PLANIFICATION

- Les mécanismes du sous-développement de J.M. ALBERTINI
chez Editions Ouvrières
- La planification du développement de WATTERSTON - chez DUNOD

NB : Il s'agit d'ouvrages à conseiller aux élèves des Centres.
(En mathématiques, les Professeurs pourront s'inspirer des cours
de lère année d'Université pour certaines parties).