توصيف برنامج كلية الصيدلة ــجامعة طنطا

Programme Specifications

University: Tanta **College: Pharmacy**

Programme Specifications

A- Basic Information

1. ***Programme title:*** Bachelor degree In Pharmaceutical Sciences (B. Pharm.Sci.)
2. ***Programme type:*** Single
3. ***Faculty:*** Faculty of Pharmacy, Tanta University.
4. ***Departments:***
    1. Department of Pharmaceutical Chemistry
    2. Department of Pharmaceutical Analytical Chemistry
    3. Department of Biochemistry
    4. Department of Pharmaceutical Technology
    5. Department of Pharmacognosy
    6. Department of Pharmaceutical Microbiology
    7. Department of Pharmacology & Toxicology
    8. Department of Clinical Pharmacy.

5- Coordinator: Prof. Dr. **Tarek EL-Saeed EL-Banna** , Vice Dean for Learning and Student Affairs.

6- External evaluation: Prof. Dr. **Saleh EL-Sharkawy**: Professor of pharmacognosy, Faculty of Pharmacy, Mansoura university.

7- Programme approval date: Modified and approved on 15/4/2012

B- Professional Information :

1. ***Programme Aims:***

The programme aims to graduate pharmacists with high qualifications; knowledge; and skills in order to:

1. Safely and effectively handle chemicals and pharmaceutical products taking into consideration pharmacy law and legalizations.
2. Formulate, prepare pharmaceutical products from different sources and participate in systems for dispensing, storing, and distribution of medications.
3. Perform various qualitative and quantitative analytical techniques and fulfill criteria for both GLP and GMP to assure the quality of raw materials, procedures and pharmaceutical products.
4. Provide information and education services to community and patients about rational use of medications and medical devices.
5. Comprehend pathophysiology of diseases and participate in health care team in order to provide the community with sufficient health care and raise their public health concepts.
6. Work in hospitals, cancer units, pharmacy, forensic medicine field, industrial, research institutes and biochemical laboratories
7. Demonstrate capability of communication skills, time management, critical thinking, problem solving, decision-making, team-working, marketing, promotion, business and computation and numeric skills.
8. Perform responsibilities in compliance with legal, ethical and professional rules.
9. Encourage continuous self learning.
10. Apply the concepts of clinical pharmacy.

2. ***Intended learning outcomes (ILOs):***

a) Knowledge and Understanding:

It is intended that, on successful completion of the programme, students will be able to efficiently demonstrate comprehensive knowledge and clear understanding of:

a1- Principles of pharmaceutical calculations, formulation, dispensing and manufacturing of medicine in different dosage forms.

a2- Identification of medicinal plants, qualitative, quantitative and instrumental analysis of their biologically active constituents and methods of isolation and purification of active constituents from medicinal plants.

a3- Quality assurance of raw materials, in-process and final products either of herbal or chemical drugs.

a4- Good pharmaceutical manufacturing practice.

a5- Pharmacopoeial and regulatory requirements.

a6- Stability of medicines; evaluation and control of biological, chemical and physical degradation.

a7- Microbial contamination and its control.

a8- Sterilization processes and aseptic procedures.

a9- Sources and purification of substances used in medicine.

a10- Analytical methods: principles, design, development, validation and application and good laboratory practice.

a11- The properties of medicinal substances and their relationship to molecular structure.

a12- Normal and abnormal body function: physiology, biochemistry, microbiology, nutrition, immunology, infective processes and pathology.

a13- Absorption, distribution, metabolism and excretion of medicines and factors affecting each process.

a14- Therapeutic uses of medicines including adverse reactions, interactions of medicines and their significance in treatment, the different mechanisms of possible drug interactions.

a15- Recognition of disease states and management of symptoms.

a16- Drug toxic profiles and management of substance misuse.

a17- Medicine management: dispensing, clinical pharmacy, responding to symptoms, prescribing, provision of medicine and patient information and reporting adverse reactions to medicines.

a18- Pharmacy regulations and legislation.

a19- Basic knowledge about botany, biology, physical pharmacy, biostatistics, general chemistry, administration, mathematics, English language, psychology, sociology, pharmacy orientation, management, health, environment and poison control and pharmacy practice.

a20- Properties of materials used in preparation of various dosage forms and delivery systems of biologically active molecules.

a21- Actions of medicines within living systems: molecular, cellular, biological and physical aspects.

a22- Principals of complementary therapy.

a23- The pharmacist role in health care, health screening and promotion, including diagnostic testing.

a24- The social and behavioral sciences relevant to pharmacy.

a25- The general role of the pharmacist in the healthcare system and the contribution of pharmacist to public health.

a26- The common medical terms and expressions. The general sources of drug information.

a27- Sterile dispensing including preparation of intravenous admixtures and total parenteral nutrition (TPN).

a28- The basic epidemiology and pathophysiology of diseases of the different body systems.

a29- The concept of drug and poison information centers, information about medication errors, evidence-based medicine and drug monographs.

a30- Different methods of biological screening of different classes of drug activities as well as the principles and techniques of biological assays that can be used in determination of the potency of many classes of drugs.

a31- The rational physical and chemical approaches to drug design & development with emphasis on modern techniques of drug design.

a32- Definitions and physical principles of each unit operation in industrial pharmacy, rationale use of the equipment for a specific application in pharmaceutical industry and the factors affecting the different operation processes in pharmaceutical industry.

a33- Bioequivalence studies, dose adjustment when shift form IV to oral and therapeutic drug monitoring and its advantage.

a34- Different types of medication errors and the recommendation for its prevention, the total parenteral nutrition including guidelines for monitoring, formulation and potential complication and studying the intravenous admixture service: rationale, development, stability and the preparation of IV fluids under aseptic conditions.

a35- Normal laboratory values (enzymes, biochemical markers, and tumor markers), causes, clinical feature, diagnosis and treatment of some diseases.

a36- The basic principles of drug actions, pharmacological actions of drugs and the therapeutic uses, adverse effects and dosage of drugs from different pharmacological classes.

a37- The basic principles of toxicology and clinical toxicology including the major classes of toxins, their mechanism of toxicity and the basic principles in management of poisoning.

a38- The basic principles of biostatistics.

a39- Principles of management and financial resources.

a40- Definitions and importance of marketing in business, promotional activities in healthcare, different types of marketing analysis, balance sheet and operating income management.

a41- Principles of proper documentation and drug filling systems.

b) Intellectual Skills:

On successful completion of the programme, graduates will be able to:

b1- Design and formulate different dosage forms of a particular drug.

b2- Retrieve, critically evaluate and interpret pharmaceutical information and data.

b3- Calculate medicine doses and dosage regimens.

b4- Interpret patient and clinical data, including patient records held within practice setting.

b5- Interpret prescriptions and other orders for medicines.

b6- Apply knowledge and critical understanding of essential facts, concepts, principles and theories relating to the subject areas identified under knowledge and understanding.

b7- Recognize and control possible physical and/or chemical incompatibilities that may occur during drug dispensing.

b8- Recognize and analyze pharmaceutical problems and plan strategies for their solution.

b9- Contribute to the development of health care through reflective practice, enquiry and innovation.

b10- Predict the meaning of common medical terms.

b11- Calculate the common pharmacokinetic parameters which can affect the drug plasma concentration time profile .

b12- Use the patient objective and subjective data to formulate a patient medical problem list.

b13- Apply the basics of pharmacology and therapeutics to prepare a list of all

possible therapeutic options for the management of various diseases and conditions.

b14- Recognize the difference between the different available sources of drug information.

b15- Apply all the basic pharmaceutical knowledge to provide proper pharmaceutical care for the patients.

b16- Predict all possible drug interactions.

b17- Apply basic knowledge to design new drug delivery systems.

b18- Apply the concepts of GMP and GLP in pharmaceutical manufacture to obtain a good quality final pharmaceutical product.

b19- Set a QC plan and determine suitable methods of analysis of drugs as raw material or in dosage forms or in biological fluids.

b20- Screen unknown drug sources for the presence of different classes of natural products.

b21- Apply the molecular modeling programs in the design of effective drug lead to a new target according to the available data about that target.

b22- Apply the basics of the biopharmaceutical considerations in drug product design.

b23- Apply specific preventive and control measures to prevent infections spread in the community.

b24- Determine market needs, improve the relationship with customers and manage and control pharmacy business as well as integrating knowledge and making judgments about the methods of pharmacoeconomics.

b25- Analyze and interpret results and information acquired from primary literature sources, then organize and communicate them in oral and written form.

b26- Select the suitable analytical method for isolation, identification and quantification of compounds depending on their nature.

b27- Apply the principles of bioinformatics and computer aided tools in drug design.

b28- Apply various principles in the characterization and quality control of biopharmaceutical products.

b29- Apply the principles of pharmacoeconomics in promoting cost effective pharmacotherapy.

c) Professional and Practical Skills:

It is intended that, on successful completion of the degree programme, graduates will be able to:

c1- Identify and analyze different drug classes.

c2- Identify different medicinal plants, isolate and analyze their active constituents.

c3- Manufacture, label, store, manage product life cycle and make marketing plan for different pharmaceutical products.

c4- Use clinical data, patient assessment and appropriate medical literatures to optimize therapeutic drug regimens.

c5- Accurately obtain information from other health professionals, medical records and pharmacy records and use this information on behalf of the patient to identify, assess, solve and prevent drug related problems.

c6- Efficiently advise the patient about dosage, food regimen, side effects of the drugs and drug interaction.

c7- Properly prescribe OTC drug suitable for patient taking in consideration the history of patient.

c8- Use the common medical terms in presenting and describing the patient condition in the pharmacist notes.

c9- Design the dosing regimen for patients based on the conditions of each individual patient.

c10- Formulate therapeutic plan and recommend the drug of choice in different diseases for individual patient based on the available information.

c11- Prepare a monitoring plan for the therapeutic and adverse effects of drugs for each individual patient.

c12- Conduct patient counseling to teach the patients about their medications.

c13- Utilize the available drug information sources in answering drug information request. Advise patients by informing and influencing decisions and action of health and social care professionals.

c14- Handle chemical reagents especially some dangerous materials.

c15- Apply preventive measures for different microbial diseases. Perform gram stains, isolate colonies and/or plaques, maintain pure cultures using biochemical test media and record accurately the microscopic observations.

c16- Identify the type of poisoning in different biological samples by different analytical procedures and evaluate the toxic effects of poisons on different organs.

c17- Outline and design different pharmaceutical operations and equipment.

c18- Conduct library and experimental research, retrieve information, analyze and interpret experimental results.

c19- Employ proper documentation and drug filing systems.

c20- Synthesize, purify and identify active substances from different origins.

c21- Maintain public awareness on rational use of drugs, vaccination and drug abuse and misuse.

c22- Conduct patient counseling on the rational use of drug and implement the public health education.

d) General and Transferable Skills:

It is intended that, on successful completion of the degree programme, graduates will be able to:

d1- Retrieve and evaluate information from a variety of sources, including libraries, databases and internet.

d2- Work independently or as a part of team in different pharmaceutical fields.

d3- Demonstrate essential skills pertinent to any domain including pharmaceutical sciences and pharmacy practice.

d4- Demonstrate oral and written communication skills.

d5- Participate effectively in the health care team as drug expert.

d6- Advancing the pharmacy profession by coping with the new development in the profession and providing the different clinical pharmacy services.

d7- Practice mathematical calculations, statistical analysis, computing as well as using the most reputable internet medical information sources to extract the desired information.

d8- Apply the laws, legalization and ethics of pharmacy to control the behavior of pharmacist and those who work in the medical field.

d9- Develop good selling, financial, stock management and negotiation skills.

d10- Demonstrate creativity and time management skills.

d11- Implement writing and presentation skills.

d12- Demonstrate critical thinking, problem solving and decision making abilities.

3- National Academic Reference Standard (NARS) :

1. Attributes of the Graduates

Pharmacy graduates work in a multi-disciplinary profession and must acquire the necessary attributes in various pharmacy aspects for pursuing their career. They should demonstrate comprehensive knowledge, clear understanding and outstanding skills as follows:

1.1. Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations.

1.2. Capable of formulating, preparing pharmaceutical products from different sources and participating in systems for dispensing storage and distribution of medications.

1.3. Perform various qualitative and quantitative analytical techniques and fulfill criteria of GLP nod GPMP to assure the quality of raw materials, procedures and pharmaceutical products.

1.4. Provide information and education services to community and patients about rational use of medications and medical devices.

1.5. Comprehend principles of pathophysiology of diseases and participate with other health care professionals in improving health care services using evidence-based data.

1.6. Plan , design and conduct research using appropriate methodologies.

1.7. Develop presentation, promotion, marketing, business administration, numeric and computation skills.

1.8. Demonstrate capability of communication skills, time management, critical thinking, problem solving, decision-making and team working.

1.9. Perform responsibilities in compliance with legal, ethical and professional rules.

1.10. Able to be a life-long learner for continuous improvement of professional knowledge and skills.

2- Knowledge and Understanding:

2.1. Principles of basics, pharmaceutical, medical, social, behavioral, management, health and environmental science as well as pharmacy practice

2.2. Physicochemical properties of various substances used in preparation of medicines including inactive and active ingredient as well as biotechnology and radiolabelled products.

2.3. Principles of different analytical techniques using GLP guidelines and validation procedure.

2.4. Principles of isolation, synthesis, purification, identification and standardization methods of pharmaceutical products.

2.5. Principles of drug design, development and synthesis.

2.6. Properties of different pharmaceutical dosage form including novel drug delivery systems.

2.7. Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.

2.8. Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence study.

2.9. Principles of hospital pharmacy including i.v. admixture, TPN and drug distribution system.

2.10. Principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection, sterilization methods and microbiological QC of pharmaceutical products.

2.11. Principles of body functions in health and disease states as well as basis of genomic and different biochemical pathways regarding their different correlation with different diseases.

2.12. Etiology, epidemiology and laboratory diagnosis and clinical features of different disease and their pharmacotherapeutic appr

2.13. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contraindications, ADRs, and drug interactions.

2.14. Principles of clinical pharmacology, pharmacovigilance and rational use of the drugs.

2.15. Basis of complementary and alternative medicine.

2.16. Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.

2.17. Methods of biostatistical analysis and pharmaceutical calculations.

2.18. Principles of management including financial and human resources.

2.19. Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.

2.20. Principles of proper documentation and drug filling systems.

2.21. Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.

3- Professional and Practical Skills:

3.1. Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

3.2. Handle and dispose chemicals and pharmaceutical preparation safely.

3.3. Compound, dispense, label, store and distribute medicines effectively and safely.

3.4. Extract, isolate, synthesize, purify, identify, and / or standardize active substances from different origin.

3.5. Select medicines based on understanding of etiology and pathophysiology of disease.

3.6. Monitor and control microbial growth and carry out laboratory tests for identification of infectious and noninfectious diseases.

3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological samples.

3.8. Apply techniques used in operating pharmaceutical equipments and instruments.

3.9. Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.

3.10. Advise patients and other healthcare professional about safe and proper use of medicines.

3.11. Conduct research studies and analyze the results.

3.12. Employ proper documentation and drug filing systems.

4- Intellectual Skills:

4.1. Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.

4.2. Comprehend and apply GLP, GMP, GSP, and GCP guidelines in pharmacy practice.

4.3. Apply quantitative and qualitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.

4.4. Recognize and control possible physical and / or chemical incompatibilities that may occur during drug dispensing.

4.5. Select the appropriate method of isolation, synthesis, purification, identification, and standardization of active substances from different origin.

4.6. Apply the principles of bioinformatics and computer aided tools in drug design.

4.7. Apply various principles to determine characteristics of biopharmaceutical products.

4.8. Select and assess appropriate methods of infection control to prevent infections and promote public health.

4.9. Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.

4.10. Calculate and adjust dosage and dose regimen of medications.

4.11. Assess drug interactions, ADRs and pharmacovigilance.

4.12. Apply the principles of pharmacoeconomics in promoting cost / effective pharmacotherapy.

4.13. Analyze and interpret experimental results as well as published literature.

4.14. Analyze and evaluate evidence-based information needed in pharmacy practice.

5- General and Transferable Skills:

5.1. Communicate clearly by verbal and written means.

5.2. Retrieve and evaluate information from different sources to improve professional competencies.

5.3. Work effectively in a team.

5.4. Use numeracy calculation and statistical methods as well as information technology tools.

5.5. Practice independent learning needed for continuous professional development.

5.6. Adopt ethical, legal and safety guidelines.

5.7. Develop financial, sales and market management skills

5.8. Demonstrate creativity and time management abilities.

5.9. Implement writing and presentation skills.

5.10. Demonstrate critical thinking, problem-solving and decision-making abilities.

Coverage of National Academic Refernce Standards by the Faculty of Pharmacy-programme ILOs

a)Knowledge AND Understanding

2	NARS	Programme ILOs
2.1.	Principles of basics, pharmaceutical, medical, social, behavioral, management, health and environmental science as well as pharmacy practice	a1, a19
2.2.	Physicochemical properties of various substances used in preparation of medicines including inactive and active ingredient as well as biotechnology and radiolabelled products.	a6, a20
2.3.	Principles of different analytical techniques using GLP guidelines and validation procedure.	a3, a4,a10.
2.4.	Principles of isolation, synthesis, purification, identification and standardization methods of pharmaceutical products.	a2, a9
2.5.	Principles of drug design, development and synthesis.	a31
2.6.	Properties of different pharmaceutical dosage form including novel drug delivery systems.	a1,a20,
2.7.	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	a4, a32, a41
2.8.	Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose	a13

	modification and bioequivalence study.	
2.9.	Principles of hospital pharmacy including i.v. admixture, TPN and drug distribution system.	a17, a23, a25, a27, a34
2.10.	Principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection, sterilization methods and microbiological QC of pharmaceutical products.	a7, a8, a25
2.11.	Principles of body functions in health and disease states as well as basis of genomic and different biochemical pathways regarding their different correlation with different diseases.	a12, a15, a21,a28
2.12.	Etiology, epidemiology and laboratory diagnosis and clinical features of different disease and their pharmacotherapeutic applications	a15, a28, a35
2.13.	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contraindications, ADRs, and drug interactions.	a14, a21
2.14.	Principles of clinical pharmacology, pharmacovigilance and rational use of the drugs.	a17
2.15.	Basis of complementary and alternative medicine.	a22
2.16.	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	a16, a29, a37
2.17.	Methods of biostatistical analysis and pharmaceutical calculations.	a 38
2.18.	Principles of management including financial and human resources.	a39
2.19.	Principles of drug promotion,	a40

	sales and marketing, business administration, accounting and pharmacoeconomics.	
2.20.	Principles of proper documentation and drug filling systems.	a41
2.21.	Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.	a18, a24

b) Intellectual Skills

4	NARS	Programme ILOs
4.1.	Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	b1, b17, b22
4.2.	Comprehend and apply GLP, GMP, GSP, and GCP guidelines in pharmacy practice.	b18
4.3.	Apply quantitative and qualitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.	b19,b28
4.4.	Recognize and control possible physical and / or chemical incompatibilities that may occur during drug dispensing.	b7, b8
4.5.	Select the appropriate method of isolation, synthesis, purification, identification, and standardization of active substances from different origin.	b26
4.6.	Apply the principles of bioinformatics and computer aided tools in drug design.	b21, b27
4.7.	Apply various principles to determine characteristics of biopharmaceutical products.	b28
4.8.	Select and assess appropriate methods of infection control to prevent infections and promote public health.	b23
4.9.	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	b13
4.10.	Calculate and adjust dosage and dose regimen of medications.	b3, b11
4.11.	Assess drug interactions, ADRs and pharmacovigilance.	b12, b16

4.12.	Apply the principles of pharmacoeconomics in promoting cost / effective pharmacotherapy.	b24, b29
4.13.	Analyze and interpret experimental results as well as published literature.	b25
4.14.	Analyze and evaluate evidence-based information needed in pharmacy practice.	b14

c) Professional and Practical Skills

3	NARS	Programe ILOs
3.1.	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	**c8**
3.2.	Handle and dispose chemicals and pharmaceutical preparation safely.	**c14**
3.3.	Compound, dispense, label, store and distribute medicines effectively and safely	**c3**
3.4.	Extract, isolate, synthesize, purify, identify, and / or standardize active substances from different origin.	**c2**
3.5.	Select medicines based on understanding of etiology and pathophysiology of disease.	**c4, c9, c10,c11**
3.6.	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and noninfectious diseases.	**c15**
3.7.	Assess toxicity profiles of different xenobiotics and detect poisons in biological samples.	**c16**
3.8.	Apply techniques used in operating pharmaceutical equipments and instruments.	**c17**
3.9.	Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.	**c12**
3.10.	Advise patients and other healthcare professional about safe and proper use of medicines.	**c6, c13, c22**
3.11.	Conduct research studies and analyze the results.	**c18**
3.12.	Employ proper documentation and drug filing systems.	**c19**

d) General and Transferable Skills

5	NARS	Faculty of Pharmacy
5.1.	Communicate clearly by verbal and written means.	**d4**
5.2.	Retrieve and evaluate information from different sources to improve professional competencies.	**d1**
5.3.	Work effectively in a team.	**d2, d5**
5.4	Use numeracy calculation and statistical methods as well as information technology tools.	**d7**
5.5	Practice independent learning needed for continuous professional development.	**d6**
5.6.	Adopt ethical, legal and safety guidelines.	**d8**
5.7.	Develop financial, sales and market management skills	**d9**
5.8.	Demonstrate creativity and time management abilities.	**d10**
5.9.	Implement writing and presentation skills.	**d11**
5.10.	Demonstrate critical thinking, problem-solving and decision-making abilities.	**d12**

Teaching and learning:

The degree course features a variety of teaching approaches chosen to meet ;stated learning objectives, including:

Lectures, practical sessions, tutorials, field visits and summer training course.

Assessment:

Written examinations, practical assessments and oral presentation. Evaluation of successful students will be according to the following standards:

Excellent: from 85% to over from total marks.

Very good: from 75% to less than 85% from total marks.

Good: from 65% to less than 75% from total marks.

Passable: from 60% to less than 65% from total marks.

In case of failure, the evaluation is as follows:

Weak: from 30% to less than 60% from total marks.

Very weak: less than 30% from total marks.

4- Curriculum Structure and Contents:

a- Programme duration: 5 years.

b- Programme structure:

.b.i- No of credit hours per 5 year:192 hours

b.ii- Practical field training: 400 hours summer course

b.iii- Programme levels: Typical credit hour system is not applied .

Comparison between NARS Curriculum Structure AND Faculty of Pharmacy, Tanta University Curriculum Structure.

NARS		Faculty of Pharmacy	
Sciences	**Subjects**	**Sciences**	**Subjects**
Basic **10-15%**	Physical, organic and analytical chemistry, biology, biophysics, computer science, mathematics.	**Basic** **14.1%** **(27hr/192hr)**	Organic and analytical chemistry, biology, mathematics Biostatistics.
Pharmaceutical **35-40%**	Pharmacy Orientation, Medical & Pharmaceutical Terminology, Pharmaceutics, Physical Pharmacy, Industrial Pharmacy, Pharmaceutical Technology, Biopharmaceutics, Pharmacokinetics, Pharmaceutical Chemistry, Pharmacognosy, Pharmaceutical microbiology, Molecular biology, Pharmaceutical biotechnology, Quality Assurance And Quality Control, Instrumental Analysis, Biological Drug Assay.	**Pharmaceutical** **40 %** **(78hr/192hr)**	Pharmacy Orientation, Medical & Pharmaceutical Terminology, Pharmaceutical formulation, Pharmaceutics, Physical Pharmacy, Industrial Pharmacy, GMP, Biopharmaceutics, Pharmacokinetics, Pharmaceutical Chemistry, applied Pharmacognosy, Pharmacognosy Pharmaceutical microbiology, Quality Control, Instrumental Analysis, Biological Assay, Phytochemistry, Drug Design

NARS		Faculty of pharmacy	
Sciences	**Subjects**	**Sciences**	**Subjects**
Medical 20-25%	Anatomy, Histology, Physiology, Pathology, Biochemistry, Parasitology, Pharmacology, Clinical Pharmacology, Therapeutics, Medical Microbiology, Immunology And Virology.	**Medical 23.5% (45hr/192hr)**	Anatomy, Histology, Physiology, Pathology, Biochemistry, Clinical Biochemistry, Parasitology, Pharmacology, Therapeutics, Medical Microbiology, two elective courses
Pharmacy Practice 10-15%	Pharmaceutical Care and Professional Pharmacy, (Clinical, Hospital, Community …etc), Complementary and alternative medicine, Drug and poison Information, Pharmacy Laws and regulations.	**Pharmacy Practice 11% (21hr/192)**	Clinical Pharmacy, Professional Pharmacy & drug Interactions, Health Care, Applied Pharmacology, Drug Information, Pharmacy Laws and regulations.
Health And Environmental 5-10%	Public Health, Egyptian health system and its policies, Biostatistics, Healthy Life Style, Toxicology, Forensic Medicine, First Aid And Emergency Medicine	**Health And Environmental 5.21% (10hr/192hr)**	Public Health, Biostatistics, Toxicology, Forensic Chemistry.

NARS		Faculty of Pharmacy	
Sciences	**Subjects**	**Sciences**	**Subjects**
Behavioral and Social 2-4%	Psychology, Communications, Social and administrative pharmacy, Pharmacy Ethics.	**Behavioral and Social 2.1% (4hr/192hr)**	Psychology, Sociology.
Pharmacy management 2-4%	Sales, Marketing And Drug Promotion, Pharmaceutical Business Administration, Pharmacoeconomics.	**Pharmacy management 3.13% (6hr/192hr)**	Marketing and Promotion.
Discretionary Up to 8%	Professional And Non Professional Sciences	**Discretionary 5.21% (10hr/192hr)**	Medicinal Plants, English,
Pharmacy Training (Should be included in B. Sci. Programme)	Not less than 300hr in a pharmaceutical location.	**Pharmacy Training**	400hr in a pharmaceutical location.

Programme courses.

Pre pharmacy

First semester

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Pharmaceutical analytical Chemistry	1012	2	2	3
Pharmaceutical organic Chemistry	1021	2	2	3
Medicinal Plants	1035	2	2	3
Biology	1247	2	2	3
English	1255	2	--	2
Biostatistics	1067	2	1	2
Pharmacy Orientation	1078	1	--	1
Total				**17**

Second semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Analytical chemistry	1112	2	2	3
Organic Chemistry	1121	4	2	5
Medicinal Plants	1135	2	2	3
Mathematics	1341	2	1	2
English language	1355	2	--	2
Anatomy	1367	2	2	3
Total				**18**

First year

First semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Organic Chemistry	2011	4	2	5
Pharmaceutics	2024	2	2	3
Physiology	2237	3	2	4
Histology	2247	2	2	3
Sociology	2258	2	--	2
Pharmacognosy	2065	2	2	3
Total				**20**

Second semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Analytical Chemistry	2112	2	2	3
Physical Pharmacy	2124	2	2	3
Pharmacognosy	2135	2	2	3
Physiology	2347	3	2	4
Pharmaceutical Microbiology	2156	2	2	3
Medical & Pharmaceutical Terminology	2168	1	--	1
Psychology	2378	2	--	2
Total				**19**

Second year

First semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Instrumental Analysis	3012	2	2	3
Pharmaceutical Microbiology	3026	2	2	3
Pharmaceutical Formulations	3034	2	2	3
Biochemistry	3043	2	2	3
Chemistry of Crude drugs	3055	3	4	5
Parasitology	3066	2	2	3
Total				**20**

Second semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Pharmaceutical Formulations	3114	2	2	3
Microbiology of diseases	3126	2	2	3
Biochemistry	3133	2	2	3
Chemistry of Crude drugs	3145	3	4	5
Biopharmaceutics	3154	2	2	3
Pharmacokinetics	3168	2	2	3
Total				**20**

Third year

First semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Pharmaceutical Formulation	4014	2	2	3
Pharmacology	4027	3	2	4
Pathology of diseases	4236	2	2	3
Hygiene	4046	3	-	3
Industrial Pharmacy	4054	2	2	3
Pharmaceutical Chemistry	4061	2	2	3
Total				**19**

Second semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Pharmaceutical Chemistry	4111	2	2	3
Pharmacognosy	4125	2	2	3
Pharmacology	4137	3	2	4
Clinical Biochemistry	4143	2	2	3
Toxicology	4157	2	2	3
Clinical Pharmacy	4168	2	2	3
History of Pharmacy & pharmacy Laws.	4174	1	-	1
Total				**20**

Fourth year

First semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Clinical Pharmacy	5018	2	2	3
Professional Pharmacy & drug Interactions	5028	1	2	2
Bioassays	5037	2	2	3
Therapeutics	5048	3	-	3
Industrial Pharmacy	5054	2	2	3
Forensic Chemistry	5061	1	2	2
Elective Course	(5401-5444)	2	2	3
Total				**19**

Second semester:

Course Title	Course code	No. of hr./week		
		Lecture	Lab.	Credit Hrs
Clinical Pharmacy	5118	2	2	3
Professional Pharmacy & drug interactions	5128	1	2	2
Drug Design	5131	2	2	3
Industrial Pharmacy (GMP)	5144	1	2	2
Drug Control	5152	2	2	3
Health Care administration	5168	2	-	2
Drug Information	5178	2	-	2
Elective Course	(5401-5444)	2	2	3
Total				20

6.Programme admission requirements:

General High School Certificate with major in biology and chemistry, or an equivalent certificate from a foreign institute recognized by the Supreme Council of Universities.

7. Regulation for Progression and programme completion:

"For the students to be transferred from one academic year to the next, he/she is required to have successfully passed in all subjects. However, the student may still be transferred if he/she has failed in not more than two basic subjects and two complementary ones from the same academic year or from previous years of study. In such cases, students "carrying" subjects from one year to the next, should re-sit for their "failed" subjects in their proper respective semesters. Final year students who have failed in a maximum of two basic subjects and two complementary ones in that year or from previous years can re-sit for their exams in those subjects in November of the same year. Should the student fail again, he/she has to re-sit for his/her exams in those subjects in their proper respective semesters there after as many times as necessary until he/she succeeds." Bylaws and Regulations for Undergraduate Students, Faculty of Pharmacy, Tanta University (1993), Article (14)

Enrollment opportunities for "regular" and "external" students:

Educational Year	Enrollment opportunities	
	Regular student	**External students**
Pre pharmacy	Two opportunities	None
First	Two opportunities	One opportunity
Second	Two opportunities	Three opportunities
Third	Two opportunities	Three opportunities
Fourth	Two opportunities	Two opportunities, but if the student succeeds in half the number of subjects, he/she would be allowed to re-sit for the exam in the subjects he/he has failed in indefinitely until he/she is graduated.

"Once a student exhausts the number of opportunities of being a "regular" student, he becomes an "external" student for a certain number of times according to the above table. Once an "external" student in a certain year succeeds in his/her exams for that year to allow him/her to be transferred to the following year, he/she automatically becomes registered as a "regular" student again". Bylaws and Regulations for Undergraduate Students, Faculty of Pharmacy, Tanta University (1993).

8.Evaluation of programme intended learning outcomes:

Evaluator	**Tool**	**Sample**
Senior students	Questionnaire	100
Alumni	Questionnaire	20
Stakeholders	Questionnaire	10
External evaluator	None	None
Others	None	None