



Comparative Analysis of Professional Programs of India and the USA

Dentistry, Medicine, and Pharmacy Education

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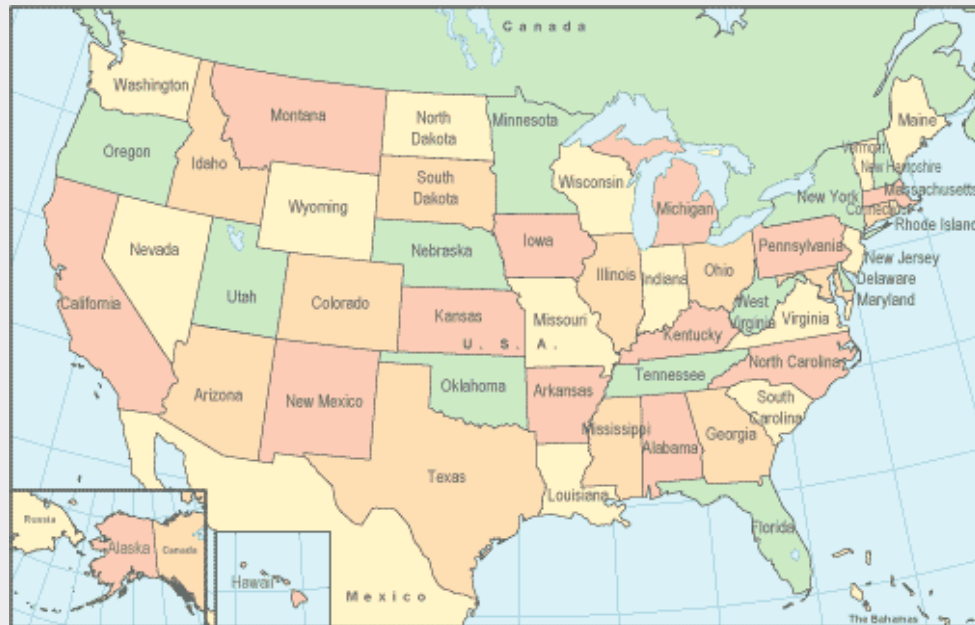
Objectives

- Provide a brief overview of the educational system of India
- Illustrate structure and features of professional education programs in dentistry, medicine, and pharmacology in India
- Provide documentation samples of Indian credentials



United States at a Glance

- Population (2007): 281 million
- Number of universities (2008): 2,022
- Number of American studying in India(2007): 2,115
- Number of students studying in American universities (2005): 17.5 million





India at a Glance

- Population (2007): 1.3 billion
- Number of universities (2006): 279
- Number of Indians studying in U.S. universities (2007): 88,833
- Number of students studying in Indian universities (2006): 9.3 million



Last updated by MDD on 10/21/08

Indian Educational System (1950's-1980's)

(does not include MBA, or Education, Engineering and Professional degrees)

In 1985, India has adopted a uniform (so called 10 + 2) system of education where undergraduate university programs are based on a 12-year secondary credential and require 3 years of study for the award of a Bachelor of Arts, Science, or Commerce Pass degrees with the exception of **University of Calcutta** which continued to offer a two-year undergraduate Pass degree most likely through 1998 or 1999 (with a three-year Honors option).

	Council for the Indian Certificate Exams		Central Board of Secondary Education
Years	Pre-1976	1976-85	1976-85
1 - 8 univ.			
12		Indian School Certificate	All-Indian Senior School Certificate (since 1979)
11	Indian School Certificate (also known as Senior Cambridge Certificate)		All-Indian Higher Secondary, (Higher Secondary Exam pre-1976)
10		Indian Certificate of Secondary Education	All-Indian Secondary School Certificate

	Andhra Pradesh			Assam		Bihar	
Years	Pre-1962	1962-69	1969-85	1962-73	1973-85	Pre-1970	1970-85
8 univ.	Ph.D.		Ph.D.				
7 univ.		Ph.D.					Ph.D.
6 univ.					Ph.D.	Ph.D.	
5 univ.	MA/MS/MCOM	MA/MS/MCOM	MA/MS/MCOM				
4 univ.					MA/MS/MCOM	MA/MS/MCOM	MA/MS/MCOM
3 univ.	BA/BS/BCOM	BA/BS/BCOM	BA/BS/BCOM		(3-year Bachelor after 1985)		(3-year Honours Bachelor after 1985)
2 univ.					BA/BS/BCOM	BA/BS/BCOM	BA/BS/BCOM
1 univ.	Intermediate			Higher Secondary School Leaving Certificate (only 1968-72)			
12		Pre-University (also Higher Secondary Multipurpose, and School Certificate Exam)	Higher Secondary School Certificate, Intermediate Exam	Higher Secondary Leaving Certificate	Higher Secondary School Leaving Certificate, Pre-University, (also Intermediate since ca. 1977)	Intermediate Exam	Intermediate Exam
11	Secondary School Certificate, (also Higher Secondary Certificate Exam)	Higher Secondary Certificate, Matriculation Exam,		Secondary School Certificate, (or High School Leaving Certificate)		Pre-University Exam, Higher Secondary Certificate, (also Secondary School Certificate in 1960s)	Higher Secondary Certificate
10		Secondary School Certificate	Secondary School Certificate, (also Matriculation Exam - 1970)	(or Secondary School Certificate)	High School Leaving Certificate, (also Matriculation Exam)	Secondary School Certificate	Secondary School Certificate
	(1-6 Primary)		(1-8 Primary)	(1-8 Primary)	(1-7 Primary)	(1-7 Primary)	(1-7 Primary)



All India Secondary School Examination Certificate

1998

प्रम. संख्या/ S. No. SSE/ 98 173202 (1841)

केन्द्रीय माध्यमिक शिक्षा बोर्ड
Central Board of Secondary Education

Regn. No. D97/1841/000010/50

सेकण्डरी स्कूल परीक्षा, १९९८
ALL INDIA SECONDARY SCHOOL EXAMINATION 1998

यह प्रमाणित किया जाता है कि
This is to certify that

आत्मज/आत्मजा श्री
Roll No. 6132841 Son/Daughter of Shri

जिनकी जन्म तिथि
Born on FIFTEENTH JULY NINETEEN HUNDRED EIGHTY THREE

है, ने बोर्ड द्वारा मार्च १९९८ में आयोजित सेकण्डरी स्कूल परीक्षा
passed the Secondary School Examination of the Board held in March, 1998.

निष्ठातय से
from CHINMAYA VIDYALAYA SR SEC SCH VASANT VIHAR ND

निम्न विषयों में उत्तीर्ण की
in the following subjects :

ENGLISH COURSE-A	SANSKRIT	MATHEMATICS
SCIENCE WITH PRAC.	SOCIAL SCIENCE	WORK EXPERIENCE
PHY & HEALTH EDUCA	ART EDUCATION	

दिल्ली
Delhi

दिनांक
Dated 15-06-1998


परिीक्षा नियंत्रक
Controller of Examinations

(K. D. Shafina)

वर्ग विहित जिस विषय के आगे लगा है, वह विषय परीक्षार्थी ने पूरे परीक्षा में उत्तीर्ण किया है।
against a subject indicates that the candidate passed in the subject at the Compartmental Examination



Higher Secondary Certificate Examination 1990

 GUJARAT SECONDARY EDUCATION BOARD GANDHINAGAR STATEMENT SHOWING THE MARKS IN EACH SUBJECT OBTAINED AT THE HIGHER SECONDARY CERTIFICATE EXAMINATION (10 + 2 PATTERN)				
MONTH & YEAR OF EXAMINATION	CENTRE	DISTRICT AND SCHOOL NO.	STREAM	SERIAL NO. OF STATEMENT
MARCH 1990	062	13.070	GENERAL	016757
CANDIDATE'S NO.	CANDIDATE'S FULL NAME BEGINNING WITH SURNAME			
NAME OF THE SUBJECT		MARKS OBTAINED/OUT OF		
001 GUJARATI (H.L.)		070/100	ZERO	SEVEN ZERO
013 ENGLISH (L.L.)		050/100	ZERO	FIVE ZERO
022 ECONOMICS		056/100	ZERO	FIVE SIX
046 BUSI. & ADMN.		058/100	ZERO	FIVE EIGHT
135 STATISTICS		068/100	ZERO	SIX EIGHT
154 ELEMENTS OF ACCT.		083/100	ZERO	EIGHT THREE
GRAND TOTAL OF MARKS OBTAINED/OUT OF		0385/0600	64	PASS
ZERO THREE EIGHT FIVE				
PERCENTAGE		RESULT	GRADE	THEORY SC & MATHS
			ONE	

NOTE:


(i) XO Indicates Exemption

(ii) AO Indicates Absent

(iii) ** below marks indicate that deficiency is condoned

IMPORTANT NOTE

No change in this statement of marks shall be made except by the authority issuing it. Any infringement of this requirement will result in the cancellation of the statement in question and may also involve imposition of other appropriate penalty as may be decided by the Board.





Dental Education





Dental Education in the United States

- Pre-Dentistry:
 - Two years (minimum) of undergraduate education preceded by high school
 - Undergraduate courses including biology, English, inorganic & organic chemistry, and physics
 - American Dental Association (ADA) Dental Admission Test required for admission
 - measure general academic ability, comprehension of scientific information, and perceptual ability



Dental Education in the United States

- Dentistry
 - Four years of study
 - First two years focus on biomedical sciences of anatomy, biochemistry, embryology, histology, microbiology, pathology, pharmacology, & physiology
 - Final two years contain most dental science instruction
 - Didactic and clinical instruction
 - Completion leads to Doctor of Dental Surgery degree
 - Access to graduate/postgraduate advanced dental education

National Dental Examination required for licensure



Graduate dentistry programs (USA)

- University of Pennsylvania



- Master of Science in Oral Biology

- Three-year academic program, including coursework and research

- Columbia University



COLUMBIA UNIVERSITY
College of Dental Medicine

- Master of Science degree in Periodontics

- Three-year program, clinical and research focus
 - Prepares licensed dentists for periodontics specialty, in practice or research



Dental Education in India

- Bachelor of Dental Surgery (BDS)
 - Four-year program of study following high school
 - One-year compulsory rotating internship begins after fourth year
 - Since early 1990's
 - Internship is required to be completed for the BDS and for licensure as a dentist in India.



Graduate dentistry programs (India)

- **Master of Dental Surgery**
 - Typically, two-year program of study following BDS
 - Areas of concentration: Conservative Dentistry, Periodontics, etc.



Gujarat University Bachelor of Dental Surgery (2007)

We, the Chancellor, Vice Chancellor and Members
of the Court of the Gujarat University certify that
the withinsigned

Patel Jigneshkumar Pravinbhai

of K. M. Shah Dental College

having been examined for the degree of

Bachelor of Dental Surgery

and adjudged to have passed in the

Same, having undergone the prescribed period of housemanship

the degree of

**Bachelor of
Dental Surgery**

has been conferred on him at Ahmedabad,

on the twenty fifth day of the month of February

in the year two thousand seven.

In Testimony whereof are set the Seal of the

said University and

the Signature of the said Chancellor.



Nawal Kishan Sharma.

Chancellor



Gujarat University - Statement of Marks

GUJARAT UNIVERSITY STATEMENT OF MARKS

Sr. No. 20010000296

Obtained in each subject at the First B.D.S. Examination held in

FEBRUARY-2002

Seat No.	Name	College	Centre	College	Grand Total	RESULT
169	PATEL JIGNESHKUMAR PRAVINBHAI	260	70	KMS DENTAL		
	Human Anatomy including Histology	Human Physiology & Biochemistry	Dental Materials			
	Theory	Practical	Theory	Practical	Theory	Practical
Max. Marks	100	100	100	100	100	100
Min. Marks	50	50	50	50	50	50
169	57	52	56	61	30	66
					344	PASS

MARKS
OBTAINED

Exemption: If a candidate passes in any of the subjects of the examination will entitle a candidate to claim permanent Exemption from appearing in the subject or subjects at subsequent attempts. N.B.: (i) Notes indicated on right hand-top corner may please be carefully read. (ii) No change in any entry is to be made except by the authority issuing the certificate. Any infringement will be severely dealt with.

02-JUN-2002

by *h.adia*
University Registrar

First B.D.S.

Notes: X00 INDICATES EXEMPTION AT A PREVIOUS EXAMINATION
Z000 INDICATES ABSENCE
Z001 INDICATES DISTINCTION IN THE SUBJECT
(75% OF TOTAL MARKS IN THE SUBJECT)

GUJARAT UNIVERSITY
First B.D.S. Examination

Sr. No. 2001 0000296

Passed the First B.D.S. Examination held by the Gujarat University

His/Her Seat No., Month and Year of Examination and Class Obtained there at are as mentioned here below.

Seat No.	Month & Year of Examination	Class Obtained
169	FEB-2002	PASS

Ahmedabad - 380 009

02-JUN-2002

by *h.adia*
University Registrar

N.B. No change in any entry is to be made except by the authority issuing the certificate and that the infringement of the rule will be severely dealt with.



Medical Education in the United States

- Requirements for admission into medical program
 - Bachelor's degree in any discipline (not always)
 - Biology, chemistry, physics and mathematics coursework
 - Medical College Admission Test (MCAT)



Medical Education in the United States

- Medical School
 - Four years of study, including clinical work
- Year One
 - Normal human biology
 - Introductory patient care
 - Public health



Medical Education in the United States

- Year Two
 - Disease
 - Nutrition
 - Pharmacology
 - Organ function and biological systems/processes



Medical Education in the United States

- Year Three
 - Transition from the classroom to clinical setting
 - Apply practical medical knowledge, develop problem solving and communication skills
 - Develop appropriate diagnoses
- Year Four
 - Continue clinical exposure
 - Preceptorship
 - Make decisions regarding specialty and residency





Medical Education in India

- Allopathic (Western medicine)
- Ayurvedic (Traditional medicine)
- Homeopathic (Alternative medicine)





Ayurvedic Terms



Padarth Vigyan - Chemistry

Ayurved Itihas - Ayurvedic Medicine

Ashtang Sangraha - Eight Branches of Ayurveda

Sharir rachana Vigyan - Anatomy

Sharir Kriya - Physiology

Swasthavritta - Preventive & Social Medicine


Rog Nidan & Vikruti Vigyan - Pathology

Agadtantra & Vyawhar Ayurved - Forensic Medicine




Medical Education in India

- Bachelor of Medicine and Bachelor of Surgery (MBBS)
 - First professional degree in medicine
- Four and one-half year program of study, plus one year internship
 - Three stages (12+18+24)



Medical Education in India (MBBS)

- Stage One: Twelve months
 - Anatomy, Physiology and Biochemistry
- Stage Two: Eighteen months
 - Pharmacology, Pathology, Microbiology and Forensic Medicine
- Stage Three: Twenty-four months
 - Ophthalmology, Otorhinolaryngology, Community Medicine, General Medicine, Pediatrics, Surgery, Orthopedic Surgery and Obstetrics & Gynecology
- Internship
 - Compulsory rotating internship required prior to award of MBBS degree




Medical Education in India (MBBS)

- Medical Licensure
 - Provisional registration with the Medical Council of India is granted on completion of the final MBBS examination.
 - Full/permanent registration with MCI is granted only after the compulsory rotating internship is completed; this level of registration represents licence to practice medicine in India




Pharmacy Education





Pharmacy Education in the United States

- Bachelor of Science with a major in Pharmaceutical Sciences
 - Four-year program which does not prepare for practice as a pharmacist (no practical experience)
- Bachelor of Pharmacy
 - Five-year program which prepares for practice as a pharmacist (discontinued around 2004)
- Doctor of Pharmacy
 - Six-year professional degree program after high school or two-year professional degree program after a Bachelor of Science degree with a major in Pharmaceutical Sciences which prepares for professional practice as a pharmacist



Pharmacy Education in the United States

- Doctor of Pharmacy
 - Required for licensure as a pharmacist
- Master of Science/Doctor of Philosophy
 - Theoretical, research oriented
 - Not for professional practice



Pharmacy Education in India

- Diploma in Pharmacy
 - Two-year program following twelve years of primary and secondary study (since 1994)
 - Check year and admission requirement! (10 vs. 12)
- Bachelor of Pharmacy
 - Diploma in Pharmacy precedes admission
 - Four-year program leading to degree
 - Required for licensure as a pharmacist in India



Bachelor of Pharmacy


Rajiv Gandhi
University of Health
Sciences

2000

No 001647

ಕರ್ನಾಟಕ ಜೈವಿಕ ವಿಜ್ಞಾನಗಳ
ಕರ್ನಾಟಕ
Rajiv Gandhi University of Health Sciences
Karnataka

certifies that

ಯಥಾಯೋಗ್ಯವಾಗಿ  ದೃಢೀಕರಿಸುತ್ತಾ

has been duly admitted to the Degree of
B.PHARM

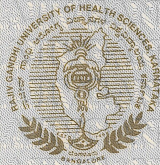
ಪದವಿಗೆ ಅಗತ್ಯವಾದ ಅರ್ಹತೆಗಳನ್ನು ಪೂರೈಸಿದ ಪರಿಗಣಿಸಲಾಗಿರುವ ಕಾರಣ
in recognition of the fulfilment of requirements
ಮೇಲೆ ಕಾಣಿಸಿದ ಪದವಿಗೆ ಅವರನ್ನು ಅಂಗೀಕರಿಸಲಾಗಿದೆ. ಆ ಪದವಿಯ ವಿವರಗಳು ಹೀಗಿವೆ
for the said degree as follows

ಪರೀಕ್ಷೆಯ ವರ್ಷ : } SEP / OCT 2000
Year of Examination : }

ಪಡೆದ ವರ್ಗ : } FIRST
Class : }

ವಿಶ್ವವಿದ್ಯಾಲಯದ ಅಧಿಕಾರ ಮುದ್ರೆಯೊಡನೆ ನೀಡಲಾಗಿದೆ.

Given under the seal of the University



ಬೆಂಗಳೂರು ದಿನಾಂಕ 17-03-2001 ಕುಲಪತಿ
Bangalore : Date : Vice-Chancellor

**RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES, KARNATAKA**

BANGALORE - 560 041

ರಾಜೀವ್ ಗಾಂಧಿ ಆರೋಗ್ಯ ವಿಜ್ಞಾನಗಳ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕರ್ನಾಟಕ

ಬೆಂಗಳೂರು - 560 041

STATEMENT OF MARKS

Sl. No.: Y.J.- 195791

FINAL B.PHARM (RS2) EXAMINATION**OCTOBER 2007**

Register Number

03P3661

Name of the Student

Sl. No.	Subjects	University Examination				I.A.		Grand Total		Remarks	
		Theory / Practicals		Viva							
		Max.	Sec.	Max.	Sec.	Max.	Sec.	Max.	Sec.		
01	PHARMACEUTICAL TECHNOLOGY AND BIOPHARMACEUTICS	Th.	080	046			020	018	0100	0064	Pass
		Pr.	080	046			020	018	0100	0064	Pass
02	INSTRUMENTAL AND BIOMEDICAL ANALYSIS	Th.	080	044			020	018	0100	0062	Pass
		Pr.	080	045			020	017	0100	0062	Pass
03	PHARMACOLOGY AND TOXICOLOGY	Th.	080	038			020	018	0100	0056	Pass
		Pr.	080	058			020	018	0100	0076	Pass
04	MEDICINAL CHEMISTRY II	Th.	080	043			020	018	0100	0061	Pass
		Pr.	080	049			020	016	0100	0065	Pass
05	INDUSTRIAL PHARMACOGNOSY	Th.	080	049			020	018	0100	0067	Pass
		Pr.	080	052			020	016	0100	0068	Pass
06	ADVANCED INDUSTRIAL PHARMACY	Th.	080	044			020	017	0100	0061	Pass
07	HERBAL DRUG TECHNOLOGY	Th.	080	047			020	018	0100	0065	Pass
GRAND TOTAL								1200	0771	1ST CLASS	

Min to Pass : 50% in Theory, 50% in Practical

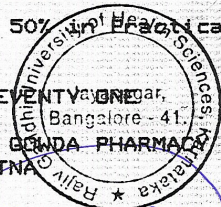
Total marks obtained: SEVEN HUNDRED SEVENTY ONE

(in words)

Name of the College : DR. H.L. THIMME GONDA PHARMACY COLLEGE

KENGAL-CHENNAPATNA

Date : 02/02/2008



PRINCIPAL

Dr. H.L.T. College of Pharmacy
Kengal, Channapatna 571 502

Registrar (Evaluation)



Resources

- University Grants Commission:
<http://www.ugc.ac.in>
- Association of Indian Universities:
<http://www.aiuweb.org/>
- Medical Council of India:
www.mciindia.org



HANDBOOK ON MEDICAL EDUCATION 1999

- ☐ MEDICINE
- ☐ DENTISTRY
- ☐ PHARMACY
- ☐ NURSING
- ☐ HOMOEOPATHY
- ☐ AYURVEDIC
- ☐ UNANI
- ☐ PHYSIOTHERAPY
- ☐ NATUROPATHY



ASSOCIATION OF INDIAN UNIVERSITIES



Thank You!

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- Orlando Diaz, Evaluator
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