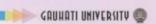# Gauhati University Prospectus 2016-2017

The Faculties, Institutes and Others

COMPUTER SCIENCE

The Department

Established in 1985, the Department of Computer Science began by introducing a one-year Post Graduate Diploma in Computer Science and Application in 1986. In 2001, a two-year (four-semester) M.Sc. programme in Computer Science was introduced after obtaining approval from the UGC, replacing the P.G.D.C.S.A. programme. The Department started a second M.Sc. programme in Information Technology in 2004.

Current research activities in the Department includes Algorithms, Data Mining, Computer Networks, Network Security, Wireless Networks, Speech Processing and Image Processing.

Profile

Year of Establishment : 1985

Head of
the Department : Dr. Abhijit Sarma

Programmes : 2-year M.Sc. in Computer Science.
2-year M.Sc. in Information Technology
Ph.D.

Intake : M.Sc. in Computer Science
20 (Maximum)
M.Sc. in Information Technology
10 (minimum)
Total : 30

Contact : The Head
Department of Computer Science
Telephone : 0361-2571138 (O)

E-mail : hod.csgu@gmail.com

Website : http://gauhati.ac.in/cs.php

Eligibility

M.Sc. (CS/IT) Programme

Candidates satisfying any one of the following qualifications or equivalent qualifications:
i. B.Sc. with Computer Science as the Major subject
ii. B.Sc. with Computer Science as a general subject
in. B.C.A/B.Sc. (IT)
iv. B.E./BTech. (CSE/IT)
v. P.G.D.C.S.A. or equivalent with B.Sc.

Candidates must have Mathematics as a subject/paper at both the TDC and 10+2 levels, obtaining the minimum pass mark.

The minimum percentage of marks required at the TDC level is 45% in aggregate (in the Major course only for candidates having-Major in Computer Science). For candidates having P.G.D.C.S.A., the minimum requirement is 45% in aggregate at the degree examination and in P.G.D.C.S.A. individually.

There will be a common admission test for all eligible candidates. The test will consist of a single paper of 100 marks and all the questions will be of the multiple-choice type. The course content for this paper will be the TDC general course in Computer Science of Gauhati University, and will also include questions on General Awareness in the field of Computer Science.

The final selection of candidates will be made on the basis of the admission test.

Faculty: Teaching and Research Interests

Professors

Anjana Kakoti Mahanta, M.Sc. (GAU), PH.D (GAU),
Reseach interests: Algorithms and Data Structure, Data Mining and Warehousing

Associate Professor

Abhijit Sarma, B.E. (DIB), M.C.A. (DIB), Ph.D. (IITG), *abhijit_gu@yahoo.com*

Research interests: Computer Networks, Network Security, Wireless Networks, Image Processing

Assistant Professor

Sanjib Kr. Kalita, M.C.A. (GAU), PH.D. (GAU) (On Lien to KKHSOU)

Research Interest: Speech Processing, Image Processing.

Dwipen Laskar, M.Sc. (GAU), M.Tech. (Tezpur)
Research Interest: Data Mining, Image Processing,
Assistant Professor (Contractual)

Pranamika Kakati, M.C.A., Ph.D *Research interests: Fuzzy Logic, Neural Networks.*

Irani Hazarika, M.Sc, NET D *Research interests: Data Mining, Image Processing*

Guest Faculty
Surajit Medhi, M.Sc. *Research interests: Graph Data Base Systems*

Farha Naznin, M.Sc. *Research interests: Data Mining, Machine Learing*

Dolly Sarma, M.Sc. *Research interests: Computer Networks*

Kandarpa Das, M.Tech. *Research interests: Artificial Intelligent*

Jayanta Nath, , M.Tech. *Research interests: Embedded Systems, Temperature Mesurment & Control, VLSI*

Bireswar Banik , M.Sc. *Research interests: Network Security.*

Lab Facilities

(i) Computing Laboratory

The Department has two Computing Laboratories with seventy desktop computers and three high-performance multi purpose servers connected via a high performance computer network and related accessories. Other facilities include a LAN Trainer Kit, Dot Matrix Printers, High Speed Scanners for the students, and Laser Printers / Inkjet Printers for official use.

A good collection of open- source sofware and documentation are available for use. Dedicated leased line Internet Connectivity is used for accessing Web documents, journals, study materials etc.

(ii) Hardware / Embedded system Laboratory

One Hardware/embedded system laboratory is providing state of the art facilities in these fields. The major equipments available in this laboratory are PCB prototyping machine, Digital Video Microscope, MCB x 51 Evaluation Board, Rapid Development kits, Manual stencil Printer, SMT HOT Rework Station and 8085 Microcontroller kits.

Completed Research Project

1) **Title:** "Development of Network Traffic Classification based approach for Botnet detection"

Chief Investigator: Abhijit Sarma

Funding Agency: Department of Electronics and Information Technology, Govt. of India.

Duration: 2008-2010

2) **Title:** "Development of a framework for logging and analysis of network traffic to secure IT infrastructure,

Chief Investigator: Abhijit Sarma

Funding Agency: : Department of Information Technology, Govt. of India.

Duration: 2013-2015

Ongoing Research Project

1) "Fake Currency Detection" with Sanjib Kalita as the Principal Investigator (on Lien to KKHSOU), sponsored by ASTEC, Assam

Placement Profile

Some of the organizations where our students have got placements include the following: Xcome Technology, Taipei, Taiwan; Start Technologies, Taiwan; Versine Technologies, Kolkata; CDAC, Bangalore; Maharashtra Knowledge Corporation Ltd; Web Tech India, Bangalore; AMTRON, Guwahati; Wipro Systems; NIIT Bangalore; Maverik Systems, Chennai, ICICI Bank, TCS, FCI, CID (Assam), etc. Besides, past students of this Department are now engaged in teaching positions in various educational institutions within and outside the state of Assam.

How to Find Us

The Department of Computer Science is situated in a three storied building on the western side of the (Academic Staff College),UGC-HRDC

SYLLABUS STRUCTURE UNDER CBCS (M.Sc. in COMPUTER SCIENCE)

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
FIRST SEMESTER								
CSC 1016	Advanced Concepts in OOP	Core	4	1	1	6	7	Graded
CSC 1026	Advanced Computer Organization and Architecture	Core	4	2	0	6	6	Graded
CSC 1036	Operating System	Core	4	1	1	6	7	Graded
CSC 1046	Mathematical Foundations of Computer Science	Core	4	2	0	6	6	Graded
CSC 1056	Advanced DBMS	Core	4	1	1	6	7	Graded
Semester Total			20	7	3	30	33	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
SECOND SEMESTER								
CSC 2016	Data Communication and Computer Networks	Core	4	1	1	6	7	Graded
CSC 2026	Algorithms and Complexity Theory	Core	4	2	0	6	6	Graded
CSC 2036	Software Engineering	Core	4	1	1	6	7	Graded
CSC 2046	Computer Graphics and Multimedia	Core	4	1	1	6	7	Graded
CSC 2056	Advanced Data Structure	Core	4	0	2	6	8	Graded
Semester Total			20	5	5	30	35	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
THIRD SEMESTER								
CSC 3016	Theory of Computations	Core	4	2	0	6	6	Graded
CSC 3026	Distributed System	Core	4	1	1	6	7	Graded
CSC 3036	Compiler Design	Core	4	1	1	6	7	Graded
CSC 3046	Seminar	Core	0	0	0	3	6	Graded
CSC 3xx6		Electivel/ Open	4	1	1	6	7	Graded
Semester Total			16	5	3	27	33	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
FOURTH SEMESTER								
CSC 4016	Programming languages	Core	4	1	1	6	7	Graded
CSC 4026	Project Work	Core	0	0	4	6	8	Graded
CSC 4xx6		Elective II/Open	4	1	1	6	7	Graded
CSC 4xx6		Elective III	4	1	1	6	7	Graded
Semester Total			16	5	3	27	29	

List of Electives

Elective Subjects for 3rd semester M.Sc. (Computer Science)

[All the following courses carry a total of 6 credits]

1. COM3056 Image Processing (open)
2. COM3066 Cryptography and Information Security
3. COM3076 Data Mining and Warehousing (open)

4. COM3086 Pattern Recognition
5. COM3096 Web Programming Technologies
6. COM3106 Natural Language Processing

Elective Subjects for 4th semester M.Sc. (Computer Science)

[All the following courses carry a total of 6 credits]

1. COM4036 Embedded System
2. COM4046 Artificial Intelligence (open)
3. COM4056 Speech Processing (open)
4. COM4066 Applied Graph Theory and Algorithms

5. COM4076 System Administration and Networking
6. COM4086 System Security
7. COM4096 Wireless Communication and Networks
8. COM4106 Queuing theory and Operations Research

NB : For open elective papers a maximum of 8 seats will be provided for students outside the department. Knowledge of C/C++ programming, Discrete Mathematics will be required for getting enrolled into these courses.

SYLLABUS STRUCTURE UNDER CBCS (M.Sc in INFORMATION TECHNOLOGY)

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
FIRST SEMESTER								
INF1016	Advanced Concepts in OOP	Core	4	1	1	6	7	Graded
INF1026	Advanced Computer Organization and Architecture	Core	4	2	0	6	6	Graded
INF1036	Operating System	Core	4	1	1	6	7	Graded
INF1046	Mathematical Foundations of Computer Science	Core	4	2	0	6	6	Graded
INF1056	Advanced DBMS	Core	4	1	1	6	7	Graded
Semester Total			20	7	3	30	33	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
SECOND SEMESTER								
INF2016	Data Communication and Computer Networks	Core	4	1	1	6	7	Graded
INF2026	Algorithms and Complexity Theory	Core	4	2	0	6	6	Graded
INF2036	Software Engineering	Core	4	1	1	6	7	Graded
INF2046	Computer Graphics and Multimedia	Core	4	1	1	6	7	Graded
INF2056	Advanced Data Structure	Core	4	0	2	6	8	Graded
Semester Total			20	5	5	30	35	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
THIRD SEMESTER								
INF3016	Web Programming Technologies	Core	4	2	0	6	6	Graded
INF3026	Distributed System	Core	4	1	1	6	7	Graded
INF3036	Compiler Design	Core	4	1	1	6	7	Graded
INF3046	Seminar	Core	0	0	0	3	6	Graded
INF3xx6		Elective/ Open	4	1	1	6	7	Graded
Semester Total			16	5	3	27	33	

COURSE CODE	COURSE NAME	COURSE TYPE	Lect	Tut.	Prac.	Cre	Hour	Nature
FOURTH SEMESTER								
INF4016	Programming Languages	Core	4	1	1	6	7	Graded
INF4026	Project Work	Core	0	0	4	6	8	Graded
INF4xx6		Elective II/Open	4	1	1	6	7	Graded
INF4xx6		Elective III	4	1	1	6	7	Graded
Semester Total			16	5	3	27	29	

List of Electives

Elective Subjects for 3rd semester M.Sc. (Information Technology)

[All the following courses carry a total of 6 credits]

1. INF3056 Image Processing (open)
2. INF3066 Cryptography and Information Security
3. INF3076 Data Mining and Warehousing (open)
4. INF3086 Pattern Recognition
5. INF3096 Natural Language Processing

Elective Subjects for 4th semester M.Sc. (Information Technology)

[All the following courses carry a total of 6 credits]

1. INF4036 Embedded System
2. INF4046 Artificial Intelligence (open)
3. INF4056 Speech Processing (open)
4. INF4066 Agent Technologies
5. INF4076 System Administration and Networking
6. INF4086 System Security
7. INF4096 Wireless Communication and Networks **NB** : For open elective papers a maximum of 8 seats will be provided for students outside the department. Knowledge of C/C++ programming, Discrete Mathematics will be required for getting enrolled into these courses.