

Integrated MSc-PhD in Cognitive Science

University of Allahabad

Integrated (MSc-PhD) Program in Cognitive Science

Integrated MSc and PhD (Cognitive Science) at the Centre of Behavioural and Cognitive Science (CBCS) with multilevel entry/exit options as below –

YEAR	Entry point with Eligibility	Exit point certificate / Diploma / Degree Earned
1 st Year	[Bachelor's degree in Science/Engineering/Medical/Management/Biological/Life Sciences/Psychology/related disciplines	Certificate in Cognitive Science
2 nd Year	No entry	MSc Degree in Cognitive Science
5 th Year (may extend if required)	No entry	PhD in Cognitive Science

Note: Students admitted in 1st year have exit options after completion of 1st year (Certificate), 2nd year (Degree), and after PhD.

1. Eligibility Criteria

The Integrated MSc-PhD Programme shall be open to students with Bachelor's degree in Science/ Engineering/ Medical/ Management/ Biological/ Life_Sciences/ Psychology/related disciplines such as philosophy, linguistics, neuroscience, physics, mathematics, zoology, biotechnology, and anthropology with at least 55% marks.

2. Admission Process

The admission Rules, process and reservation policy shall be as per University of Allahabad rules. Admission to the Integrated program will be based on a Nation-wide written test and Interview.

(A) Written Test

Admission to the integrated MSc-PhD in Cognitive Science will be based on COGJET and/or GATE. The entrance exam will have two sections. Section 1 will assess general reasoning (MCQs) and Section 2 will be based on objective (MCQs) assessment of knowledge base required for cognitive science with questions from Cognitive Psychology, programming, mathematics, statistics and neuroscience. Candidates with a GATE examination score in relevant disciplines such as biology, zoology, psychology, life sciences, engineering, physics, mathematics, linguistics, and economics could also apply to the Integrated program in

Cognitive Science.

The candidates who have qualified for JRF in CSIR/UGC/ICMR or any other equivalent national examination will also need to appear for the entrance test.

(B) The Personal Interview

Focus of the Personal Interview is on the aptitude for Cognitive Science and base knowledge of the related disciplines.

The students enrolled in the integrated PhD program will be able to exit after the completion of the MSc degree. For a student who would want to continue with the PhD should qualify the prespecified criteria* and should have been selected for the integrated PhD program at the time of admission.

3. How to Apply

Students interested in applying to the Integrated MSc-PhD in Cognitive Science at CBCS, first need to register for COGJET 2023. Applicants can then download the form for the Integrated MSc-PhD program. The application form is available on the CBCS website and COGJET 2023 portal. The duly filled form for Integrated MSc-PhD in Cognitive Science, CBCS should be submitted via email to puneet@cbcs.ac.in latest by **05/02/2023**.

The applicants who have already submitted their application for COGJET-2023 for MSc in Cognitive Science, don't need to register for COGJET again. You only need to download the application form for the integrated program and submit as mentioned above.

There is no separate application fee to apply for the integrated program.

4. No. of seats – 20 in first year

No lateral entry in this programme

Integrated MSc-PhD in Cognitive Science

Salient Features

SEMESTER I - IV

Objectives

The goal of the Integrated program in Cognitive Science would be to help students to first develop a foundational theoretical base in Cognitive Science and learn the skills to pursue basic research in the field of Cognitive Science. The program will focus on current knowledge status of behavioural and cognitive processes and exploring new inter-disciplinary interfaces (with computer science, neuroscience, physiology, philosophy, economics and language sciences) with the aim of understanding cognition and behaviour in its research endeavours.

Learning outcomes

- Core knowledge about the interdisciplinary approach in cognitive science
- Training in research skills and methodologies of interest including eye tracking, EEG/ERP, functional neuroimaging and behavioural experimentation.
- Integrating theory and methods in cognitive science
- The program will enable the students to develop the skills for becoming an Independent researcher in the field of cognitive science and also to think about the applications of cognitive science.

Compulsory Master's Thesis

Students who opt to terminate with an MSc degree will have to do a compulsory Master's thesis starting in the third semester. Students opting to continue with the PhD (with a CGPA of at least 7/10 and above by the second semester) will be required to start with their PhD thesis work (research proposal) in the third and fourth Semester (2nd year of the integrated program). Doctoral Advisory Committee may advise the students continuing in the PhD program to take certain specific electives in the third and fourth semester depending on the area of research.

Opportunities for Placements

Students after the Integrated PhD in Cognitive Science could be placed primarily in **academic institutions** as faculty or research scientists or as research engineers in the R&D divisions within the **industry**.

Faculty positions at IITs, ISSERs, IIMs, Central Universities like University of Hyderabad, Private Universities like Flame University, Ashoka University, Christ University and others have been employing Cognitive Science graduates.

Foundation courses and skill development courses

- Scientific communication (writing and presentation skills)
- Languages: English/French/Mandarin and one of the Indian languages

Additional skill set: We propose to offer the following (short-term) courses: Art and brain, Computer applications, Programming, Mindfulness/Yoga training.

Course Structure

SEMESTER-I

Paper	Course Code	L-T-P-C	Credits	Theory Papers and Practical Labs	Sessional Marks	End Semester Marks
Paper 1	CSC501	3-1-0-4	4	Introduction to Cognition*	40	60
Paper 2	CSC502	4-1-0-5	5	Principles of Neuroscience	40	60
Paper 3	CSC503	4-0-0-4	4	Research Methods**	40	60
Paper 4	CSC504	3-0-0-3	3	Introduction to Programming and Algorithms**	40	60
Practical/ Lab sessions	CSC505	0-0-2-1	1	Psychophysics based experimentation, data analysis and research report writing	40	60
	CSC506	0-0-4-2	2	Python, MATLAB and R	40	60

*There is option for earning the credit for this course from MOOCS (SWAYAM or NPTEL)

**Courses with lab sessions

SEMESTER-II

Paper	Course Code	L-T-P-C	Credits	Theory Papers and Practical Labs	Sessional Marks	End Semester Marks
Paper 1	CSC507	4-0-0-4	4	Cognitive Neuroscience**	40	60
Paper 2	CSC508	4-0-0-4	4	Computational Models of Cognition	40	60
Paper 3	CSC509	4-0-0-4	4	Perception and Attention	40	60
Paper 4	CSC510	3-0-0-3	3	Psycholinguistics**	40	60
Lab sessions	CSC511	0-0-2-1	1	EEG/ERP recording and analysis; fMRI data acquisition	40	60
	CSC512	0-0-2-1	1	Recording eye movements for language studies	40	60

**Courses with lab sessions

SEMESTER-III

Paper	Course Code	L-T-P-C	Credits	Theory Papers and Practical Labs	Sessional Marks	End Semester Marks
Paper 1	CSC 513	4-0-0-4	4	Culture and Cognition	40	60
Paper 2	CSC 514	4-0-0-4	4	Advanced Statistics**	40	60
Paper 3	Elective 1	4-0-0-4	4	Elective 1	40	60
Paper 4	Elective 2	4-0-0-4	4	Elective 2	40	60
Practicals/ Lab sessions	CSC 515	0-0-4-2	2	Multivariate analysis, data reduction, moderation mediation analysis, structural equation modelling	40	60
				Masters' thesis planning and initiation (proposal presentation, literature review, experimental design)		

**Courses with lab sessions

SEMESTER-IV

Paper	Course Code	L-T-P-C	Credits	Theory Papers and Practical Labs	Sessional Marks	End Semester Marks
Paper 1	CSC 516	3-1-0-4	4	Philosophy of Mind	40	60
Paper 2	Elective 3	4-0-0-4	4	Elective 3	40	60
Paper 3	Elective 4	4-0-0-4	4	Elective 4	40	60
Paper 4	CSC517	0-0-0-16	16	Master's Thesis	40	60

Basket of Electives

Semester III		Semester IV	
Set I	Set II	Set III	Set IV
551 Time perception	559 Advanced Statistics	567 Computational Neuroscience	575 Cognitive Development
552 Emotions	560 Multivariate Analysis	568 Computational Vision	576 Brain Computer Interfaces
553 Actions	561 Reading	569 Computational Linguistics	577 Language and Cognition
554 Creativity	562 Neurolinguistics	570 Connectionist Modelling	578 Usability Testing
555 Consciousness	563 Cognitive Disorders	571 Brain Imaging	579 Neuroscience of Memory
556 Social Cognition	564 Cognitive Robotics	572 Pattern Recognition	580 Speech Perception and Production
557 Neuropsychological Testing	565 Decision Making	573 Advanced Signal Processing	581 Special Topics in Cognitive Science:
558 Psychometrics	566 Research ethics	574 Multisensory Integration	Human Computer Interaction Vision and cognition Methods in Cognitive Science

Transition from MSc to PhD

Students enrolled in the integrated PhD program may opt to terminate after the MSc degree. In such case they will be able to exit with an MSc degree. Those who opt to continue with the PhD will be required to decide the same at the end of first year.

* Criteria for transition from MSc to PhD

1. Overall CGPA of at least 7/10 in MSc Degree.
2. Only top 6 students willing to continue with the PhD programme will be considered.
3. On top, admission to the PhD programme will be based on
 - (a) students' performance in M.Sc. thesis
 - (b) availability in the preferred lab
 - (c) A comprehensive viva to determine students' technical and theoretical knowledge with respect to specific requirements of corresponding labs/methodologies/areas of research.
4. The probationary/mutual evaluation in the Third semester of the MSc degree before commitment to continue with the programme and the decision will be finalized by the DPC, CBCS.

Evaluation System (MSc level)

The students would undertake mid-term and final semester examinations during each semester. Grading would be based on a 10-point letter grade system as currently followed in the University. The continuous assessment would consist of a mid-term exam and term paper/assignments/presentations and the end-semester exam. As far as possible, students will be given feedback and

the answer sheets/assignments including the final exam answer sheets are discussed. The board of examiners would review the evaluation of the marks/assigned by the individual course instructors. The master's thesis is evaluated by an internal and external examiner including an open viva voce examination at the end of fourth semester.

PhD degree (Semester V to X)

The doctoral degree from Semester V to X in the MSc-PhD Integrated program will be governed by the University rules and procedures for doctoral degree. The duration of the PhD will work the same way as it does for other PhD programs as per UGC norms.

Doctoral Advisory Committee

A Doctoral Advisory Committee will be constituted for each research scholar to look after the planning and administration of the programme. The Committee will consist of the supervisor and two other faculty members working in related areas/methodology. The supervisor would act as the convenor of the Committee. The Committee will advise the student at all stages of research and evaluate the progress. It will also make recommendations regarding the extension or termination of the scholar from the Programme.

Pre-PhD Course Work

The Doctoral Advisory Committee may recommend remedial courses in Cognitive Science or related disciplines as needed. All students enrolled in a course will be evaluated by the course instructor. Evaluation is based on Course Assignments, participation in class discussions and performance in oral or written examination conducted by the course instructor.

Comprehensive Exam

Prior to submitting the research proposal, the candidate has to pass a comprehensive exam conducted by the Centre.

PhD thesis proposal

Students enrolled in the Integrated Programme will be required to submit a detailed research proposal for the PhD thesis including a review of relevant literature at the end of the second year if the student opts to continue with the PhD.
