Evaluative Report of the Department of Computer Science & Applications (DCSA)
(July 2009 – June 2013)

1. Name of the Department : *Computer Science & Applications*

The Computer Culture at Panjab University started with the establishment of a Computer Centre in 1966 with IBM-1620 computer to provide computational facility to the faculty members and research scholars. An independent Centre for Computer Science and Applications was set-up in 1983 and PGDCA was started with financial support from DOE & UGC. VAX-8350 Mainframe Computer System was installed in 1985 with financial support from UGC and the centre continued to use VAX-8350 till it became obsolete in 1997. Master of Computer Applications (MCA) (3 year full time course) was initiated in 1992. In 1997, Panjab University decided to rename "Centre for Computer Science and Applications" as "Department of Computer Science & Applications (DCSA)" with "Computer Centre" as a part of the department. In addition to its MCA programme, two more new programmes (i) Bachelors of Science (Honours School) in Computer Science (ii) Masters of Science (Honours School) in Computer Science were introduced from year 2001 and 2004, respectively. Ph.D. programme was started from the year 2005. Another MCA programme in the evening has been introduced from the year 2008 keeping in mind the optimum use of the available IT infrastructure. Presently, the department houses well-furnished Software laboratories having power backup and latest computing facilities. Students of the department have the unique opportunity of working in various development environments including Windows and Linux.

2. Year of Establishment: ***1983: Centre for Computer Science & Applications***
1997: Department of Computer Science & Applications

3. Is the Department part of a school / Faculty of the university? ***Yes, Faculty of Science***

4. Names of Programmes offered:

Name of the Programme	Specialization	Duration	Full-time /Part-time
MCA	*Computer Applications*	*3 Years*	*Full-time*
MCA(Evening)	*Computer Applications*	*3 Years*	*Full-time*
M.Sc. (Hons. School)	*Computer Science*	*2 Years*	*Full-time*
Ph.D.	*Computer Science*	*3-4 Years*	*Full Time*

5. Interdisciplinary programmes and departments involved: *Nil*

6. Courses in collaboration with other universities/industries/foreign institutions: *Nil*

7. Details of programmes discontinued, if any with reasons: *Nil*

8. Examination system: *Semester System*

9. Participation of the department in the courses offered by other departments:

Department provides faculty for the Computer related subjects in the following Departments:

- *Mathematics (B.Sc. Honours School in Mathematics & Computing)*
- *Public Health (M.Ph.- Fundamentals of Computers)*

10. Number of teaching posts sanctioned, filled and actual:

	Sanctioned	**Filled**	**Actual (including CAS)**
Professor	--	--	*2 (1 in Open & 1 in CAS)*
Associate Professor	--	*3*	*3 (all in CAS)*
Assistant Professor	*6*	*4*	*4+2 (temporary)*

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	**Qual**	**Designation**	**Specialization**	**Experience (# of Years)**	**# of Ph.D. students Guided**
 *Sonal Chawla*	*Ph.D.*	*Associate Professor (Chairperson)*	■ *Web Semantics & E-Learning*	*16*	*5 (Guiding)*
 *R K Singla*	*Ph.D.*	*Professor*	■ *Open Source Software Engineering* ■ *MANET* ■ *E-Learning*	*26*	*3 (Completed)* *6 (Guiding)*
 *M Syamala Devi*	*Ph.D.*	*Professor*	■ *Distributed Artificial Intelligence* ■ *Educational Computing* ■ *Image Processing*	*19*	*2 (Completed)* *6 (Guiding)*
 *Indu Chhabra*	*Ph.D.*	*Associate Professor*	■ *Image Processing with Neural Networks* ■ *Software Engineering* ■ *Data Mining*	*16*	*8 (Guiding)*
	*Ph.D.*	*Associate Professor*	■ *Open Source Software Engineering* ■ *Cloud Computing*	*16*	*4 (Guiding)*

Anu Gupta					
 *Jasleen Kaur*	*MCA with UGC-NET*	*Assistant Professor*	■ *Java Technologies* ■ *.NET Technologies*	*3*	--
 *Rohini Sharma*	*MCA with UGC-NET*	*Assistant Professor*	■ *Cloud Computing* ■ *Algorithms* ■ *Artificial Intelligence*	*5*	--
 *Balwinder Kaur*	*MCA with UGC-NET*	*Assistant Professor*	■ *Software Engineering* ■ *Data Mining & Data Warehousing*	*8*	--
 *Anuj Kumar*	*MCA with UGC-NET*	*Assistant Professor*	■ *DBMS* ■ *Java Technologies*	*10*	--
 *Anjali Jindia*	*MCA with UGC-NET*	*Assistant Professor*	■ *Software Engineering* ■ *E-learning* ■ *Operating Systems*	*5*	--
 *Pritibha Bhola*	*M.Tech. with UGC-NET*	*Assistant Professor*	■ *DBMS* ■ *Data Structures* ■ *Algorithms*	*5*	--

12. List of Senior Visiting Fellows, adjunct faculty, emeritus professors: *Nil*

13. Percentage of classes taken by temporary faculty – programme-wise information:

MCA: 18-20%
M.Sc.: 18-20%

14. Programme-wise Student-Teacher Ratio*:

Name of the Programme	**# of Faculty**	**# of Students**	**Student-Teacher Ratio**
MCA	*7*	*113*	*16:1*
MCA(Evening)	*7*	*144*	*20:1*
M.Sc. (Hons Sch)	*2*	*25*	*12:1*
Ph.D.	*5*	*25*	*5:1*

**All the 11 faculty members are involved in the teaching of MCA and MSC programmes.*

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual.

No. of Staff	**Sanctioned**	**Filled**	**Actual**
Technical Staff	*0*	*0*	*4*
Administrative staff	*0*	*0*	*4*

16. Research thrust areas as recognized by major funding agencies:
    (a) Semantic Web Applications(UGC)
    (b) Mobile Adhoc Networks (PURSE-DST)
    (c) Open Source Software Engineering (PURSE-DST)
    (d) Digital Learning (AICTE)
    (e) Distributed AI (PURSE-DST)
    (f) Neural Networks (PURSE-DST, DST-CHD)

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.: *6(Six)*

Project Title	**Funding Agency**	**Total Grant**
Career Award for Young Teachers (CAYT)	*AICTE*	*10.50 lacs*
Simulation and Experimental test-bed for routing algorithms in Mobile Ad-hoc Networks	*PURSE-DST*	*11.65 lacs*
Free/Open Source Initiatives and Higher Education in India	*PURSE-DST*	*5.95 lacs*
E-Education through Virtual Class room and Virtual laboratory	*PURSE-DST*	*0.40 lacs*
Design and Implementation of Algorithms and Software Package for Image Processing with Neural Networks	*PURSE-DST*	*0.60 lacs*

Development of Machine Recognition System for Hindi and Punjabi	*DST, Chandigarh*	*0.30 lacs*
Readiness and Impact of E-learning on Academic performance of University Students	*UGC*	*1.90 lacs*

18. Inter-institutional collaborative projects and associated grants received: *Nil*

19. Departmental projects funded by DST-FIST, UGC-SAP/CAS, DPE, DBT, ICSSR, AICTE etc. total grants received:

Dr Sonal Chawla

Career Award for Young Teachers	*AICTE*	*10.50 lacs*

20. Research facility / Centre with
    - State recognition: *Nil*
    - National recognition: *Nil*
    - International recognition: *Nil*

21. Special research laboratories sponsored/created by industry or corporate bodies: *Nil*

22. Publications (July 2009 to June 2013)

    - # of papers published in peer reviewed Journals (national / international): *40*

    - Chapters in Books:

Solvency of Intellectual Neural Systems Case Study", pp 839-844 Edition 2013	*Pearson Education (International Publisher)*	*ISBN 978-81-317-89991-9*
Using probabilistic Neural Network to select a Medical Specialist Agent" pp164-177 2010	*Publisher: IGI Global, USA*	*ISBN: 978-1-60566-772-0*
Advances in Computer Applications, 2012	*Bhaddal Tech publications, India*	*ISBN: 978-81-921786-4-6*

    - Books with ISBN with details and publishers: 1(Indu)

"Insight into Microprocessors (Principles, Implementation and Technology) Total Pages: 412, Dec 2012	*AP Publishers, Jalandhar-Delhi (National Publisher)*	*ISBN 81-89313-74-6*

    - Number listed in international database (e.g. Web of Sciences, Scopus, Humanities International Complete, Dare Database – International Social Sciences Directory, EBSCO host etc.): *25*

- Impact Factor –*0.65-1.932/ 0.9262*
- h-index: *3.0* (*Dr R K Singla*)

23. Details of patents and income generated: *Nil*

24. Areas of consultancy and income generated: *Nil*

25. Faculty selected nationally/internationally to visit other Laboratories/ institutions/ Industries in India and board: *Nil*

26. Faculty serving in

a) National Committees (other than PU)

Sr #	Name of the faculty with designation	Name of the committee	Position held	Duration
1.	*R K Singla, Professor*	*Board of Studies in Computer Applications at Punjab Technical University, Jalandhar*	*Chairman*	*2012-onwards*
		Research Degree Committee (RDC) in the discipline of Computer Applications, PTU, Jalandhar	*Member*	*2012-onwards*
		Research Degree Committee (RDC) in the discipline of Computer Science & Engineering, GNDU	*Members*	*2012-onwards*
2.	*Sonal Chawla Associate Professor*	✓ *Research Journal of Science, PU*	*Reviewer*	*2011-onwards*
3.	*Indu Chhabra Associate Professor*	✓ *Research Journal of Science, PU*	*Reviewer*	*2011-onwards*
4.	*Anu Gupta Associate Professor*	✓ *Research Journal of Science, PU*	*Reviewer*	*2011-onwards*

b) International committees:

Name of the faculty with designation	Name of the Board / Details	Position held	Duration
R K Singla Professor	*International Association of Engineers (IAENG), Singapore*	*Member*	*2012-till date*
Indu Chhabra Associate Professor	*IEEE Transactions on Computers* *IEEE Intelligent Systems* *International Journal Of Science And Technology, USA*	*Member*	*2011*
Sonal Chawla Associate Professor & Chairperson	*JTER, IIC, USA*	*Reviewer* *Task Panel Member*	*2011*
	Ed Media 2012, AACE, USA	*Reviewer* *Task Panel Member*	*2011*
	International Association of Computer Science and Information Technology(IACSIT), Singapore	*Member*	*2010-11*
	International Journal of Computer Science & Information Security	*Reviewer* *Chair*	*2010*

c) Editorial Boards:

Name of the faculty with designation	Name of the Board / Details	Position held	Duration
R K Singla Professor	*Panjab University Research Journal Science*	*Member*	*2005-till date*
Sonal Chawla Associate Professor & Chairperson	*Intelllectbase International Consortium(IIC), USA*	*Executive Editorial Board (EEB) Member*	*2008-10*

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programmes, workshops, training programmes and similar programmes) :

- *Faculty is encouraged to take part in refresher courses, workshops, seminars etc. to enhance their teaching and technical skills.*
- *Faculty is facilitated to develop computer-based instructional materials.*
- *Senior Faculty share their knowledge through guest lectures, open source materials*

etc.

28. Student projects:

- %age of students who have done in-house projects excluding inter-departmental projects

Number of students	**Percentag**
M.C.A (2009-2012 Batch)	*5%*
M.C.A (2010-2013 Batch)	*5%*
M.Sc.(2010-2012)	*5*
M.Sc.(2011-2013)	

- %age of students doing projects in collaboration with other universities / Industry / institute

Number of students	**Percentage**
M.C.A(2009-2012 Batch)	*95%*
M.C.A (2010-2013 Batch)	*95%*
M.Sc(2010-2012)	*95%*
M.Sc(2011-2013)	*95%*

29. Awards / recognitions received at the National and International level by

- Faculty: *Dr Sonal Chawla : Career Award for Young Teachers*
- Doctoral / post doctoral fellows: *Nil*
- Students: *Nil*

30. Seminars / conferences / workshops organized and the source of funding (National/International) with details of outstanding participants, if any.

Name	**Funding Agency**	**Dates**
Refresher Course in IT	*UGC-ASC*	*02-22 Sept 2009*
Seminar on "Free/Open Source Software and Higher Education (FOSS-HE)"	*UGC Higher Education*	*19-20 Feb 2010*
Refresher Course in IT	*UGC-ASC*	*05-25 Mar 2010*
Refresher Course in IT	*UGC-ASC*	*10-30 Sept 2010*
Refresher Course in IT	*UGC-ASC*	*11-31 May 2011*

31. Code of ethics for research followed by the department.

Every research paper/ thesis submitted for the award of PhD Degree is being verified by the Plagiarism Software "Turnitin".

32. Student profile programme-wise (July 2009-June-2013):

Name of the Programme	Applications Received	Selected		Pass %age	
		Male	Female	Male	Female
MCA		*37*	*114*	*0.61*	*1.90*
MCA(Evening)	*6000 approx*	*64*	*127*	*1.06*	*2.12*
M.Sc. (Hons Sch)	*500 approx*	*13*	*24*	*2.60*	*4.80*
Ph.D.	*400 approx*	*4*	*6*	*1.00*	*1.50*

33. Diversity of students

Name of the Programme (refer to question no.4)	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
M.C.A (2009-2012 Batch)	*75*	*13*	*12*	-
M.C.A (2010-2013 Batch)	*71*	*16*	*13*	-
M.Sc(2010-2012)	*67*	*33*	-	-
M.Sc.(2011-2013)	*85*	*15*	-	-
Ph.D(2009-13)	*19*	*74*	*6*	*1*

34. How many students have cleared all Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

As per information from students and teachers: 10 (UGC-NET exam)

35. Student progression:

Student progression	*Percentage against enrolled*
UG to PG	*NA*
PG to Ph.D.	*10%*
Ph.D. to Post-Doctoral	*Nil*

Employed • Campus selection • Other than campus recruitment	 *70%* *10%*
Entrepreneurs	*1%*

36. Diversity of staff

Percentage of faculty who are graduates	
Of the same university	*20%*
From other universities within the State	*70%*
From universities from other States	*10%*
From universities outside the country	*Nil*

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: *3*

38. Present details of departmental infrastructural facilities with regard to

(g) Library: Number of titles – *approx 4700 books*

(h) Internet facilities to staff and students: *Total Wi-Fi / Ethernet connectivity to internet.*

(i) Total number of class rooms: *3*

(j) Class rooms with ICT facility: *3 Every faculty is provided with either desktop computer or laptop to prepare the teaching material and delivered through LCD projectors fixed in all the classes of the department.*

(k) Students' laboratories: *4*

(l) Research laboratories: *1 (PURSE-DST Grant)*

39. List of doctoral, post-doctoral students and Research Associates:

(m) From the host institution / university:

Name of the Student	**Reg. No.**	**Course of study**	**Specialization**	**Year of registration**
Anu Gupta	*2005-ez-78*	*Ph.D.*	*Software Engineering*	*2009*
Sonal Chawla		*Ph.D.*	*Digital Learning*	*2009*

(n) From other institutions / universities:

Name of the Student	Reg. No.	Course of study	Specialization	Year of registration
Indu Chhabra		*Ph.D.*	*Neural Networks*	*2007*

40. Number of post graduate students getting financial assistance from the University:

40 students

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

The following points were taken into consideration:

- ✓ *Suggestions made by the departmental faculties, external experts and other stake holders*
- ✓ *Demand of the course*
- ✓ *Details of other institutions offering the course*
- ✓ *Employability*
- ✓ *Possible tie-ups*

42. Does the department obtain feedback from

(o) Faculty on curriculum as well as teaching-learning evaluation? If yes, how does the department utilize the feedback?

Yes,
All issues related to teaching-learning-evaluation are discussed at the departmental meetings on a regular basis. Suggestions for improving them are placed before the board of Studies (BoS) for approval and implementation.

(p) Students on staff, curriculum and teaching-learning evaluation and how does the department utilize the feedback?

The subject teacher gets feed back on curriculum, teaching-learning process etc from students on a regular basis. All issues related to teaching-learning-evaluation are discussed in a comprehensive manner. The department analyses these reports and suggestions and corrected measures, if needed are taken.

(q) Alumni and employers on the programmes offered and how does the department utilize the feedback?

Department is in touch with some of the alumni through personal contacts as well as social network. They offer suggestions for the improvement of the curriculum as well as teaching-learning-evaluation.

During alumni meet, a session is dedicated to discuss the syllabus and curriculum since

the feedback from alumni is extremely valuable for us to improve the curriculum, research efforts and quality of service.

43. List the distinguished alumni of the department (max. 10): *Nil*

44. Give details of student enrichment programmes (special lectures / workshops / Seminar) involving external experts.

- ✓ *Soft-skills training for MCA students every year for their placements*
- ✓ *Orientation workshop on Free Open Source Software (FOSS)-Sept 2012*

45. List the teaching methods adopted by the faculty for different programmes.

Teaching methods includes:

- *Lectures;*
- *Demonstrations;*
- *Discussions;*
- *Case analyses;*
- *Student presentations;*
- *Group projects; and*
- *Guest speakers from industry.*

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- *Preparation of lesson plans for each subject and maintenance of course files;*
- *Regular academic audits;*
- *Self assessment and feedback by alumni; and*
- *Employer's interaction.*

47. Highlight the participation of students and faculty in extension activities.

Department faculty and students actively participate in extension activities link IT Fest, Seminars, Group Discussions etc.

48. Give details of "beyond syllabus scholarly activities" of the department.

- *Quality components such as case studies, group project, student presentations*
- *Industrial Visits*
- *Technical Clubs namely networking, gaming, debugging*

49. State whether the programme/department is accredited/graded by other agencies?

MCA (Morning) programme is approved by AICTE.

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

MCA, MSc and PhD programmmes focus on basic as well as applied knowledge and skills in Computer Science and Applications that are integrated and delivered in a comprehensive manner to prepare students to enter the IT world.

51. Detail five major strengths, weaknesses, opportunities and challenges (SWOC) of the department.

Strength

1. *Good strength of faculty with Ph.D.*
2. *Good Campus placement of MCA and MSc students for the last many years, evidencing that the MCA/MSc curriculum, teaching infrastructure and its environment, etc, have been of great importance to the students and highly relevant to the Industry.*
3. *Taking rresponses from students, academic peers and employers, for review and re-design of curricula.*
4. *Research Publications in peer reviewed journals.*
5. *Continued academic growth and professional development through Seminars, Workshops, Refresher courses, Conferences etc.*

Weakness

1. *Number of sponsored major/minor research projects*
2. *Inadequate number of tie-ups/MoUs*
3. *Consultancy Activities*
4. *Fluctuating demand of market affecting placement record.*
5. *Faculty involvement in collaborative research*

Opportunities

1. *PURSE-DST grant from University to promote research projects*
2. *Training for both Faculty members and Students through workshops/seminars*
3. *Consultancies and Funded research projects.*
4. *Provision for interdisciplinary research.*
5. *Support for faculty in their higher studies with sabbatical leave*

Challenges

1. *Adopting industry Open Standards in the University to allow for the most cost-effective acquisition of IT products. The use of a standard and common set of tools will allow for the ease of communication, information interchange and the sharing of data.*
2. *Admitting high caliber students*
3. *Instability of Job opportunity in IT industries.*
4. *Set up a state-of-the-art Research Labs and promote the use of IT on a much wider scale for our teaching, learning, research and administration*
5. *To have more space for seminar hall/ class room/faculty rooms*

52. Future plans of the department.

Academic

1. *Strengthening the Computer Science manpower*
2. *Redesign curricula on par with the technology growth*
3. *Introducing new teaching and research programmes*
4. *Establish partnership with recognized universities and Industries*

5. *Formulate Academic Quality Assessment cell to monitor the academic quality parameters in the department.*

Placement

1. *Increase Industry Institute Interaction*
2. *Establish MoUs with local companies*
3. *Provide soft-skills and stress management tips to students*

Research

1. *Work for sponsored research proposals and projects.*
2. *Keep track of the latest leading-edge development to remain in the forefront of our peers*
3. *Initiative to establish an open source software lab in each affiliated college*
4. *Host national/ International conferences to share research findings and challenges prevailing nationally/internationally*