# QUALIFICATION FILE

Application Documentation: Version 1 /01 September, 2016

**NSDA Reference**
*To be added by NSDA*

## CONTACT DETAILS OF SUBMITTING BODY

**Name and address of submitting body:**

**C-DAC,ACTS**

**ACTS, Innovation Park, S. No. 34/B/1,**

**Panchvati, Pashan, Pune 411 008**

**Name and contact details of individual dealing with the submission**

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## List of documents submitted in support of the Qualifications File

1. Qualification File
2. Course Content

# QUALIFICATION FILE

## SUMMARY

| | |
|---|---|
| **Qualification Title and Code:** | Certificate Course Ms.Net |
| **Body/bodies which will award the qualification:** | Centre for Development of Advanced Computing (C-DAC) organization of the Ministry of Electronics and Information Technology (MeitY), Ministry of Communications & Information Technology |
| **Body which will accredit providers to offer the qualification:** | C-DAC |
| **Body/bodies which will be responsible for assessment:** | C-DAC |
| **Occupation(s) to which the qualification gives access:** | Certificate Course in Ms.Net aims to groom the students to enable them to work on current technology scenarios as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry.<br><br>Our .NET Online course objective is to get familiarize with Microsoft.Net, C#, VB.NET and ASP.NET technologies. The .Net online training course is designed to understand the different concepts and features of .NET coding, debugging and developing of Windows and web applications.<br><br>After the completion of the course, students can work as Software Developer or Programmer /IT Support staff/ Trainee / Tester / Technical Support and associated service sectors. |
| **Proposed level of the qualification in the NSQF:** | Level 7 |
| **Anticipated volume of training/learning required to complete the qualification:** | 320 hrs of classroom/lab learning |
| **Entry requirements / recommendations:** | Any Engineering /Science graduate with mathematics up to 10+2 level. |
| **Progression from the qualification:** | The course aims to groom the students to enable them to work on current technology scenarios as well as prepare them to keep pace with the changing face of technology and the requirements of the growing IT industry. The course curriculum has been designed keeping in view the emerging trends in advanced computing as well as contemporary and futuristic human resource requirements of the ICT industry.<br><br>These candidates will be trained in software Engineering methodology, Project development and Management skills. |

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| | They can start career as software developer, tester and Programmer, System Analyst after having relevant experience.<br><br>Candidate can start from level 7 and lead to further levels. |
| **Planned arrangements for RPL:** | NA |
| **International comparability where known:** | There are many courses available on Java Programming globally but CDAC provides knowledge in .Net Programming. After doing the course the student will be able to design, develop and maintain web-based enterprise applications effectively Also the course emphasizes on fundamental concepts and practical training delivered by best of industrial experts. Implementation of learning can be evaluated under project. |

**Formal structure of the qualification:**

| **Title of NOS/unit or other component** (include any identification code used) | **Mandatory/ Optional** | **Estimated size (learning hours)** | **Level** |
|---|---|---|---|
| Fundamentals of Computer & Oops Concepts | M | 26 | 7 |
| Software Development Life Cycle | M | 12 | 7 |
| Database Technologies | M | 30 | 7 |
| Foundations of Web Technologies | M | 32 | 7 |
| MS .Net Window programming | M | 50 | 7 |
| MS .Net Web based programming | M | 70 | 7 |
| Project | M | 40 | 7 |
| Management Development Program | M | 60 | 7 |
| Total | | 320 | |

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum or Qualification Pack.
Give details of the document here:

# QUALIFICATION FILE

## SECTION 1

## ASSESSMENT

**Body/Bodies which will carry out assessment:**
C-DAC's Exam, Evaluation and Certification department will carry out assessment as per evaluation guideline finalized by Academic Council/ Academic Management Committee.

**Will the assessment body be responsible for RPL assessment?**

- Same will be finalised when the national RPL Policy will be finalised.
- Assessment is online through our e-Pariksha system or manually, depending on the strength of students.
- Issuance of qualification is centralized through C-DAC.

**Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:**

Assessment is a necessary and essential part of conducting the Certificate Course in Ms.Net, as it provides important feedback and inputs to both the institute as well as the student. The institute gets an idea about the relative performance of each student, which also serves as feedback about the design and conduct of the course. The student gets a clear picture of his academic standing, individually and in comparison to his fellow students.

- A separate evaluation process is to be conducted for every module of the course.
- The evaluation for each module must be completed as per guidelines given below. The mid-module /surprise test evaluation is mandatory and can be taken after discussion with the concerned faculty.
- Students are evaluated on a continuous and throughout the duration of the course to make a fair assessment of the skills acquired by them. To have a very uniform and fair assessment. The evaluation process is divided into two parts:
    - Continuous Assessment - CA (150 marks)
    - Course End Examination - CCE (150 marks)

**Continuous Assessment** :This is being done primarily by the respective faculty in the form of Lab tests, assignments, quizzes, submission of term reports, presentations etc. conducted (with the help of respective course co-coordinators) at regular intervals and as and when the portions of the subjects are completed. These are basically internal exams and local to the centre. This process is further categorized into two parts.

- Lab test
- Internal test : Assignment/Case Studies /quiz and other valuation methods like case study, viva, group discussion depending on the subject and the faculty

It is recommended to conduct Management Development Program and Organisational Behaviour sessions and also conduct surprise test for the development of soft skills, logical, analytical capabilities and managerial skills for the benefit of the students and also give assignments and conduct some surprise test related to Management Development Program and Organisational Behaviour.

The figures shown below indicate the weightage of each module in the final performance statement. The examination(s) for each module must be conducted for at least that number of marks. However, the centre may conduct evaluation for a higher number of marks, in which case the marks will be

scaled down. For example, if the examination for the Operating Systems Concepts module is conducted for 100 marks, the marks earned by the student will be scaled down to out of 40.

A student must score a minimum of 40 percent marks in each component of the evaluation, and also in the aggregate score, in order to successfully clear the module. If a student scores more than 40% on aggregate but has scored less than 40% in one component of the evaluation, he will not be declared as passed.

**The weight age for each component will normally be:**

Theory examination – (CCEE) 150 marks

Laboratory examination, Internal marks 150 marks

(Internal marks: Lab Assignment Evaluation, Surprise Tests, attendance, Viva, Seminars)

The question papers for the theory as well as the laboratory examinations at all the centres will be set by C-DAC, ACTS, Pune. The centres according to guidelines provided by, ACTS, Pune, will conduct the evaluation of the laboratory and assignments locally.

**Minimum Pass marks:**

The minimum marks to be obtained for declaring a student pass in any module is as follows:

For 40 mark QP : 16 marks

For 20 mark QP : 8 marks

For 60 mark QP : 24 marks

**Assessment is through e-Pariksha system.**

**About e-Pariksha System:**

e-Pariksha is a web based application for the automation of the examination process. The system provides a great control on exams from preparing question paper to scheduling exam and from monitoring exam to generate results.

e-Pariksha has a strong administration which provides complete system status in one glance.

It's Results & Reports generations functionality provides system details in all standard and required formats.

An image based, LAN based, secure, fault tolerant and scalable system through which examinations can be delivered "on demand" basis in selected examination centres spread across the country.

System Support:

- Decentralized mode of operation(LAN based)
- Question Paper approach
- Multi lingual and multi subject support
- Browser based

Components of the e-Pariksha System Includes:

- **Administration Module**- To design course structure, Manage users, view results.
- **ePariksha System** –Assessment of students through online system.
- **Examiner Module** -To manage the examination related activity and conduct- i.e Registration data and question paper uploading, conduct of examination, response generation

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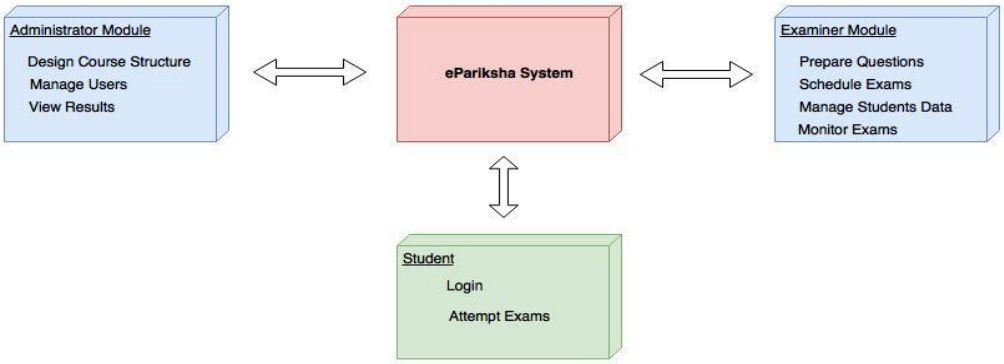
- **Student Login** –Allows students to login and attempt exams.




**Salient Features:**

- Exam Resume - Power Failure Handling
- Random Question Paper
- User friendly Interface
- Question Bank
- Instant Result
- Live Monitoring of Exams & Assignment
- Time bound exams
- Multilingual support
- Handheld devices Support
- Responsive Design

**Feedback System:** C-DAC**'s** Advanced Computing Training School (ACTS) offers various courses and training programs through its own training centres and its network of Affiliated Training Centres (ATC) spread across the country. Each year, thousands of students and professionals are trained at these centres.

The purpose of the system i.e. Online Feedback System (OFS) is to develop a web application for getting the online faculty feedback by the students studying at centres and also at the various Authorized Training Centres (ATC) affiliated to for different training programs offered by C-DAC ACTS.

This system is for conducting "The Student Survey" for quality assurance of education. Students, Faculties and administrators can all benefit from survey. This is helpful in the continual improvements in teaching programs, processes as well as infrastructure and thereby enhancing the students' learning experience at C-DAC ACTS.

The Online Feedback System make the student feedback procedure centralized for all C-DAC centres as well as various Authorized Training Centres (ATCs) located across the country through which headquarter manager can manage student feedback of faculties as well as infrastructure studying at different training centres with different reports for feedback analysis.

Please attach any documents giving further information about assessment and/or RPL.
Give details of the document(s) here:

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### ASSESSMENT EVIDENCE

There will be 150 questions to answer in 3 hours duration in Course End Exam as per the following distribution mentioned below.

| Sr. No. | Module | Learning Outcome | Theory | Lab & IA | Total Marks |
|---|---|---|---|---|---|
| 1 | Fundamentals of Computer & OOPs Concepts | • Identify the principal components of a given computer system and basic Input/output Devices, Programming File System and how a computer system works.<br>• Understand the basics of flowcharts and algorithms.<br>• Demonstrate the basic elements of imperative programming: variables, flow control and functions<br>• Effectively use industry standard tools for writing, testing, and running C code<br>• Demonstrate File Handling.<br>• Demonstrate various data types with enumeration data type. | 15 | 15 | 30 |
| 2 | Database Technologies | • Explain the concepts of relational database management system (RDBMS), particularly:<br>○ The importance of the data model, its building blocks, and how it relates to business rules.<br>○ How data is organized through the use of integrity rules and primary and foreign keys.<br>○ The importance of relational set operators, the data dictionary, and indexes.<br>○ Explain the fundamental differences between logical and physical database design.<br>• Do the following for a simple | 15 | 15 | 30 |

| | | | | | |
|---|---|---|---|---|---|
| | | prescribed business problem:<br>○ Demonstrate all Normal Forms, using Oracle 11g and need for de-normalization<br>○ Use of SQL Data Manipulation, Definition and Control commands to create and query sample data.<br>• Use of PL/SQL | | | |
| 3 | Software Development Life Cycle | • Demonstrate Software Development Life Cycle using program constructs.<br>• Apply knowledge of Quality Assurance by quality Attributes, Software Metrics or Functional and Non-Functional Requirements.<br>• Apply knowledge of Software Project planning, resource management, risk identification and risk mitigation to practical problems using agile methodologies. | 5 | 5 | 10 |
| 4 | MS .Net Window programming | • Create C# programs and use .NET system.<br>• Use selection and repetition commands. ILO 3,2,7<br>• Design C# programs.<br>• Create and use classes and inheritance. | 15 | 25 | 40 |
| 5 | Foundations of Web Technologies | • Apply knowledge of Web servers, HTML5, Java script and jQuery for website designing.<br>• Have a Good grounding of Web Application Terminologies, Internet Tools, E – Commerce and other web services.<br>• Learn and apply XML, create CSS<br>• Create forms for web pages. | 35 | 45 | 80 |

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|---|---|---|---|---|---|
| 6 | MS .Net Web based programming | • Developers learn the fundamental skills that are required to design and develop object-oriented applications for the Web and Microsoft Windows by using Microsoft Visual C# .NET and the Microsoft Visual Studio .NET development environment. This course provides an alternative entry point for less experienced programmers who are not familiar with object-oriented design and programming with Windows or the Web. | 35 | 45 | 80 |
| 7 | Management Development Program | • Good conversation skills<br>• Writing effective emails /business letters<br>• Acquire good communication skills/Interview skills /Mock Interview | 30 | - | 30 |
| 8 | Project | • Students will apply knowledge gained during term I for project work.<br>• Design, implement and evaluate computer technologies, systems, processes, components and/or programs appropriate to a defined task, while analyzing the impact on existing systems and potential future applications.<br>• Think critically, relatively and analytically in technological solutions to simple and complex problems.<br>• Apply formal frameworks, methods and management systems to | Grade | | |

| | | | | | |
|---|---|---|---|---|---|
| | | the organization, storage and retrieval of data in ways that demonstrate an understanding of both the business enterprise and the relevant technology.<br>• Implement effective business solutions across an organization that demonstrates appropriate consideration of alternative computer technologies, including networks, servers, programming languages and database systems.<br>• Plan, analyze, design and construct information systems to identified specifications, using clear and efficient code in the relevant programming language(s).<br>• Work effectively in a team to analyze the requirements of a complex software system, and solve problems by creating appropriate designs that satisfies these requirements Communicate to others the progress of the system development and the content of the design by means of reports and presentations. | | | |
| **Total Marks** | | | 150 | 150 | 300 |

**Complete a grid for each grouping of NOS, assessment unit or other component as listed in the entry on the structure of the qualification on page 1.**

**Title of NOS/Unit/Component:**

| **Assessable outcomes** | **Assessment criteria for the outcome** |
|---|---|
| Enter the learning outcomes /elements of competence which will be assessed. | List all the criteria applying to this element/outcome. |

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| | |
|---|---|
| **Certificate Course in Network Administration** | **A+ >= 85%,**<br>**A >= 70% to < 85%**<br>**B >= 60% to < 70 %**<br>**C >= 50% to < 60%**<br>**D >= 40% to < 50%**<br>**F < 40%** |

**Means of assessment 1**

Theory portion Assessment will be done through LAN based online system. Paper will be Objective question based. Lab evaluation will be done under project evaluation.

**Means of assessment 2**

**Re-examinations:**

The following conditions will be applicable for the course end re-exam:

- Students who do not appear for an exam on the scheduled date will not have an automatic right to re-examination. Only those students who, in the opinion of the centre/course coordinator have a genuine reason for being absent may be allowed to appear for a re-exam.
- Students who have failed an exam may be allowed to appear for a re-exam.
- The re-exam should be conducted following the same process as the regular examination.
- Students, who failed/remained absent in the Course End Examination conducted by , shall be allowed to appear in the re-examination only once.
- Students who remain absent or fail in the re-examination will not get any further chance for appearing for the re-examination. In such case the candidate can receive the Performance Statement and the certificate of participation without any grade.
- On evaluation of their answer sheets 20% of the marks obtained by the students will be deducted (towards de-rating for re-examination) for arriving at the final score, i.e. in order to clear the module test the student has to score a minimum of 48% marks instead of 40%.
- There will be no re-exam for the re-exam

**Pass/Fail:**

**If Candidate scored below 40% in any of the component like Theory, lab or Internal will be consider as FAIL.**

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## SECTION 2

### SUMMARY EVIDENCE OF LEVEL

| Level | Process Required | Professional Knowledge | Professional Skill | Core Skill | Responsibility |
|---|---|---|---|---|---|
| **7** | **Requires a command of wide-ranging specialised theoretical and practical skills, involving variable routine and non-routine contexts.** | **Wide-ranging factual and theoretical knowledge in broad contexts within a field of work or study.** | **Wide range of cognitive and practical skills required to generate solutions to specific problems in a field of work of study.** | **Good logical and mathematical skill understanding of social political and natural environment and organising information, communication and presentation skill.** | **Full responsibility for output of group and development** |

| Assessed outcome | Process Required | Professional Knowledge | Professional Skill | Core Skill | Responsibility |
|---|---|---|---|---|---|
| 1. Fundamentals of Computer & OOPs Concepts | Person may carry out a job as developer or tester. This job demands a command of wide-ranging specialised theoretical and practical skills, involving variable routine and non-routine contexts. | • Learning C, Data Structure concepts, Relational Database, Web Technologies and software engineering concepts will help learner to get employment as software engineer, developer or | • Candidate can develop/ test software based on practical knowledge. | Candidate will be learning management Development Program and Organisational behaviour to communicate written and oral. Aptitude, basic | Candidate can perform well and responsible for output of group and development |
| 2. RDBMS | | | | | |
| 3. Software Development Life Cycle | | | | | |
| 4. Core Java | | | | | |

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| Assessed outcome | Process Required | Professional Knowledge | Professional Skill | Core Skill | Responsibility |
|---|---|---|---|---|---|
| 5. Web Technologies | | tester or technical support. | | understanding of social political and natural environment with good analytical and managerial skills | |
| 6. Advanced Java | | | | | |
| 7. Management Development Program | | | | | |
| 8. Project | | | | | |

## SECTION 3

## EVIDENCE OF NEED

| |
|---|
| **What evidence is there that the qualification is needed?**<br><br>Set up the Advanced Computing Training School (ACTS) in 1993 to meet the ever-increasing skilled manpower requirements of the Information Communication Technologies (ICT) industry as well as supplement its intellectual resource base for cutting-edge research and development. Over the years has designed and delivered various postgraduate and undergraduate degree and diploma programmes. In addition, imparts ICT training to state and national governments and agencies, strategic sectors, corporate and industries, foreign countries and international students, based on specific requirements. |
| **What is the estimated uptake of this qualification and what is the basis of this estimate?**<br><br>http://info.shine.com/article/net-jobs-and-career-possibilities/6611.html<br><br>http://www.matrixzeroonesystems.com/it-training-resources/career-prospects-in-it-sector-as-dot-net-developer |
| **What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?**<br><br>**NA** |

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**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?**

Effective course design begins with understanding who your students are, deciding what you want them to learn; determining how you will measure student learning; and planning activities, assignments and materials that support student learning.
Our courses are specialized and market driven.
There is a dedicated team in CDAC to design and develop courses. There is a set process of reviewing and updating the by taking feedback from industry and domain experts .We are in touch with more than 500 companies and we design and updated courses with their interventions as per market demand.

## SECTION 4

## EVIDENCE OF RECOGNITION AND PROGRESSION

**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**

- This qualification has been designed in consultation with industry and domain expert keeping in mind today's need. Evaluation criteria have been added to ensure progression to related path ways identified as per career path.

Please attach any documents giving further information about any of the topics above.
Give details of the document(s) here:

1. Course Content

## QUALIFICATION FILE

**Course Name: Certificate Course in Ms.Net**

| Sr. No. | Module Name | Hours |
|---|---|---|
| 1 | Fundamentals of Computer & Oops Concepts | 26 |
| 2 | Software Development Life Cycle | 12 |
| 3 | Database Technologies | 30 |
| 4 | Foundations of Web Technologies | 32 |
| 5 | MS .Net Window programming | 50 |
| 6 | MS .Net Web based programming | 70 |
| 7 | Project | 40 |
| 8 | Management Development Program | 60 |
| | **Total** | **320** |

**Fundamentals of Computer & Oops Concepts (26**

- **Fundamentals of Computers**
  - Uses of Computer, Hardware, Accessories,
  - Interfaces and their functions, Computer hardware connectivity
  - Primary and Secondary storage
  - Input-output devices
  - Software, types of software, Operating Systems
  - Software used in Academic departments and other area.
  - Computer language, Different types of Programming Languages
  - Operating System (Introduction, The Need of Operating System, Functions of Operating System User Interface)
- **Object oriented concepts**
  - Classes and Objects
  - Access Specifiers
  - Overloading
  - Inheritance
  - Polymorphism

**Software Development Life Cycle**

- Software Engineering
- Brief concept of Software Life Cycle Models
- Agile Techniques for software development
- Software Development Tools & Techniques
- Introduction to Coding Standards
- Software Testing

**Database Technologies**

**Database Concepts**

- Client/Server Computing
- RDBMS Technologies
- Codd's Rules
- Data Models
- Normalization Techniques
- ER Diagrams

**SQL and PL/SQL**

- Overview of OORD (Oracle)
- Introduction SQL*Plus
- DDL, DML and DCL
- Tables, Indexes and Views
- Generic PL/SQL

**Foundations of Web Technologies**

- Architecture of the Web
- HTML 5.0 programming
- DHTML
- CSS
- DOM
- JavaScript
- jQuery
- The Purpose and Nature of XML
- XML Syntax and Structure rules
- XML Document Type Declaration
- XML and Data Binding XML linking mechanisms
- XML style language
- XML parsers

**MS .Net Window programming**

**MS .NET 4.5 Framework (10 hours)**

- Introduction to NET 4.5 Frameworks
- Application Domain
- Language Interoperability
- .NET Framework Class Library
- Assemblies
- Introduction of Windows Presentation Foundation
- Introduction of Windows Workflow Foundation
- Introduction of Windows Communication Foundation

**C# .NET 4.5 (40 Hours)**

## QUALIFICATION FILE

- Need of C#
- Operators
- Namespaces & Assemblies
- Arrays
- Preprocessors
- Delegates and Events
- Boxing and Unboxing
- Regular Expression
- Collections
- Exceptions Handling
- Introduction to Win Forms
- Working with database
- Windows Communication Foundation

**MS .Net Web based programming**

- Introduction and difference between ASP and ASP .Net Application
- The goals of Asp .Net 4.5
- Additional new features of Asp.net 4.5
- ASP .NET Server Controls and client-side scripts
- ASP .NET Web Server Controls
- Validation Controls
- User Controls in ASP .NET
- Working with Master-Detail relationship
- ASP .NET State Management
- ASP .NET Web Application Security
- Transaction Management
- Building .NET components
- ADO.NET 4.5, Querying with LINQ
- Master Pages, Themes and skins
- Difference between Web Services and Windows Communication foundation
- MVC Architecture
- MS.NET MVC Framework
- View master pages and view user control
- Understanding HTML Helpers
- Working with AJAX
- Using jQuery
- Authenticating users
- Understanding Routing
- Deploying ASP .NET MVC application

**Management Development Program**

Introduction to communication, Barriers to communication, Kind of communication, Confidence building Non-verbal Communication, Fluency and vocabulary, Synonyms, Antonyms, Grammar, Noun Pronoun, Verb, Adjective, Preposition, Conjunction, Words of Idioms & phrases, Sentence Construction, Fill up the blanks, Pronunciation, Conversation practice, Polite Conversation, Greeting, Logical reasoning, General Aptitude, Writing: Covering letter, Resume, Email, Presentation Skill, group discussion, Interview skills, Mock interview

## QUALIFICATION FILE