

QUALIFICATION FILE Certificate Course in Computer Aided Design using CREO

NSDA Reference

To be added by NSDA

CONTACT DETAILS OF THE AWARDING BODY FOR THE QUALIFICATION

Name and address of awarding body:

NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY
Electronics Niketan, 6, CGO Complex
Lodhi Road, New Delhi 110003

Name and contact details of individual dealing with the submission

Name: Rameshkumar MS

Position in the organisation: Senior Technical Officer

Address if different from above

NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY (NIELIT),
NIT CAMPUS POST, KOZHIKODE, KERALA. PIN – 673601.

Tel number(s) 0495 2287266 ext. 209

E-mail address: rameshkumar@nielit.gov.in

List of documents submitted in support of the Qualifications File

1. Annexure I : Detailed Syllabus of the course
2. Annexure II: Evidence of Course requirement in the industry
3. Annexure III: Evidence of Job requirement from the industry
4. Annexure IV: Industry Validations
5. Since the proposed jobrole has not been identified by SSC, the industry mapping will be as per progression pathways indicated in the QF.

QUALIFICATION FILE Certificate Course in Computer Aided Design using CREO

SUMMARY

Qualification Title:	Certificate Course in Computer Aided Design using CREO
Qualification Code	
Nature and purpose of the qualification:	This Certificate program is aligned to Level 5 The purpose of this qualification is to train the students in Computer Aided Design and developing feature based engineering models using CREO so as to increase their employability in the field of Design and Drafting
Body/bodies which will award the qualification:	NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY Electronics Niketan, 6, CGO Complex Lodhi Road, New Delhi 110003
Body which will accredit providers to offer courses leading to the qualification:	NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY Electronics Niketan, 6, CGO Complex Lodhi Road, New Delhi 110003
Body/bodies which will be responsible for assessment:	The Examination section NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY, Electronics Niketan, 6, CGO Complex Lodhi Road, New Delhi 110003
Occupation(s) to which the qualification gives access:	Designer - CAD, Product designer, Technician - CAD
Licensing requirements	Not applicable
Proposed level of the qualification in the NSQF:	Level 5
Anticipated volume of training/learning required to complete the qualification:	100 Hours
Entry requirements / recommendations:	Pursuing B.E/B.Tech/Diploma/ in Mechanical, Production, Automobile, Tool & Die, Industrial engineering, Mechatronics, Electrical, Electronics and Allied branches
Progression from the qualification:	Professional: Designer CAD – Engineer CAD – Senior Engineer – Manager Academic: No higher level qualification found available in the NQR at present.
Planned arrangements for the Recognition of Prior learning (RPL):	Presently only candidates who undergo training shall be assessed. It will be incorporated once RPL strategy is finalized
International comparability where known:	NA
Date of Planned review of the Qualification	After Every 2 years

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Formal structure of the qualification:			
Topics	Mandatory/ Optional	Estimated size (learning hours)	Level
(i) Concepts of CAD	M	10 Hours	Level 5
(ii) Create Feature based modelling	M	35 Hours	Level 5
(iii) Create Detailing	M	20 Hours	Level 5
(iv) Create Design assembly	M	20 Hours	Level 5
(v) Export files using Data exchange	M	10 Hours	Level 5
(vi) Theory Test	M	1 Hour	Level 5
(vii) Practical Test	M	4 Hours	Level 5

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SECTION 1

ASSESSMENT

Body/Bodies which will carry out assessment:

The Examination section
 NATIONAL INSTITUTE OF ELECTRONICS AND INFORMATION TECHNOLOGY
 Electronics Niketan, 6, CGO Complex
 Lodhi Road, New Delhi 110003

Will the assessment body be responsible for RPL assessment?

RPL Policy will be described as and when available

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 GUIDELINE:

The candidate shall be assessed for his learnings about Fundamentals of CAD, Feature based modelling, Detailing, Design assembly and Data exchange in CREO

- Criteria for assessment based on each learning outcome, will be assigned marks proportionately to its importance.
- Assessment comprises the following components:
 - Exercises carried out in labs
 - Theory and practical exam
 - Attendance and punctuality

ASSESSMENT EVIDENCE

Outcome to be assessed	Assessment Criteria for the out come	Marks	
		Theory	Practical
Develop plan for design process & configure software for the design process	Identify requirement, develop plan for design process. Configure the software to suit the design process. Working with the user interface, Working with the model Top down and Bottom up approaches. Design conferencing Procedures for building models	2	10
Design and develop part models as per requirement in Computer aided design using CREO	Conceptual sketching through solid feature-based modelling Build solid parametric part out of a 2D sketch by combining basic and advanced features like extrusions, sweeps, cuts, holes, slots, rounds. Building models in faster manner using CREO edit features like pattern, mirror, trim etc Modifying and updating the model by adding or removing features by using CREO engineering features. Procedures for modifying part's features and	6	40

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	resolving failures		
Develop required views from the part model for post processing	Creating drawings directly from the solid model Customizing the drawings with sketched geometry Making cosmetic changes to the drawings.	4	10
Design and develop assemblies using the created part models as per requirement in Computer aided design using CREO	Creating and manipulating assemblies. Form assemblies by combining component parts designed specifically to fit together Model simple and compound in assembly Modify, analyse, or reorient assembly	6	10
Export files using Data exchange	Transfer data between CREO releases and modules, and other CAD products Verifying and repairing imported data	2	10

Means of Assessment

The candidate shall be assessed for his learnings about Fundamentals of CAD, Feature based modelling, Detailing, Design assembly and Data exchange in CREO

Skill performance is assessed by conducting Theory and Practical assessment on engineering modelling, creation of feature based models, assembly and detailing in CREO

Examination	No of questions	Time	Marks theory	Marks Practical & Class performance	Level
Theory	20	1 Hour	20	80	4
Practical	2	4 Hours			

Pass/Fail

Trainees scoring the percentage of marks mentioned below will be declared as “competent” otherwise” not yet competent”

Following Grading Scheme (on the basis of total marks) will be followed:

Grade	S	A	B	C	D	E	Fail
Marks Range (in %)	≥90%	80%-89%	70%-79%	60%-69%	50%-59%	40-49%	<40%

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SECTION 2

EVIDENCE OF LEVEL

Title/Name of qualification: Certificate Course in Computer Aided Design using CREO - Level 5			
NSQF Domain	Key requirement of job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process Required	Develop different Part models, Assembly models, generate its connected drawing by using CREO Parametric and ensuring the quality aspect of models after creating.	The job holder is expected to perform his/her work with well-developed skill in creating design model using CREO parametric software by adopting clear choice of procedure to build a model as per the requirement. Considering that these outcomes are required to be perfected and performed consistently within the defined parameters of the job roles chosen by him/her. It uses procedures in familiar context and has a choice of creativity to enrich the job & take an appropriate decision to handle the situation. Examples of such tasks include: 1. Development of part models, assembly model and detailing etc	5
Professional Knowledge	Study and analyse the model drawing to develop Feature based model by using CREO Parametric software by considering the design techniques and manufacturing concept which requires knowledge of facts, principles processes and general concepts in working field.	The job holder is expected to know the facts & principles to order to follow clearly identified processes to conduct smooth operation and resolving procedures, efficient design and modelling. He/She needs to constantly apply the standards as laid down by the respective organizations from time to time. The person is expected to have a knowledge of: 1. Engineering drawing and design standards 2. Industrial components recognition This creates a well-accepted service culture for the organization and helps the employee to relate it to the job role effectiveness in augmenting customer delight.	5
Professional Skill	Selection of appropriate modelling tools in CREO which depends on the type of model and associated features to be generated to have the complete design model. The Job holder must know the resolving procedures to address problems commonly encountered during generating the models Generate Assembly models using the part models	The job holder is expected to have cognitive and practical skill in understanding of sketches and selection of appropriate tools for creating various features associated with models, generating assembly models & its views from different angles, generating drawings required for further processing by maintaining standard of etiquette and service practices and also maintain a Log book of operation	5

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	<p>Generate Drawings of the part/assembly models</p> <p>Export/import data within CREO and other CAD environments</p> <p>Optimize the models in certain conditions</p>		
Core Skill	<p>Calculate the unknown data like parameters of standard features like threads, drafts etc as per the international standards</p> <p>Communicate to the supervisors/co-workers if anything goes wrong during the process.</p> <p>Aware about the social as well as environmental Situations during working.</p>	<p>The job holder is expected to have behavioural, personal and telephone etiquettes, establish effective rapport with customers, responding appropriately to customers, communicating information to customers (verbal & non-verbal), skill to arithmetic and algebraic principles, basic understanding of social political and natural environment for example, providing interim feedback to customers, in case of delays, processing compliances.</p>	5
Responsibility	<p>Understand the drawing properly, create Part & Assembly models and generate drawings for further processing independently and solve the related problems of his work.</p>	<p>The job holder is expected to complete assigned tasks adhering to maintain health & hygiene, maintain safety at workplace & maintain IPR of organization & customers. He/she is expected to undertake on-the-job learning and participate in training and development, interventions and assessments</p> <p>Hence the individual working in this job role has complete responsibility for delivering quality of his own work & some responsibility for others works too and can be placed at level 5.</p> <p>Examples of such responsibility are:</p> <ol style="list-style-type: none"> 1. Design and develop design model, assembly model and its detailing and perform the tasks in efficient manner with min down time 2. contribute in achieving the industry's profit margin 	5

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SECTION 3

EVIDENCE OF NEED

What evidence is there that the qualification is needed?

Based on the survey reports (Annexure 2) about the job market and the interaction with employers it was revealed that there is huge skill gap in the academic programs in the field of CAD and there is a better job market for CAD trained professionals. This course is framed to facilitate skill development in CAD sector focusing on students/unemployed youth at Diploma, Engineering graduates, etc. to increase their employability to work in 'Design' and 'Modelling' fields

What is the estimated uptake of this qualification and what is the basis of this estimate?

60 to be trained per annum based on job market study in the home state.

What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?

The qualification is originally designed by curriculum head, industrial expert, and academic professional experts. The work group under the guidance of curriculum development committee already conducted desk search as well as refers the qualification packs for as a supporting document for the mapping of curriculum. As per the search it is found that, no duplicate Certificate course in CAD using CREO is existing in the NQR as on date

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?

The curriculum committee comprising industrial expert, training head and representative of existing employer will review every 2 years. Feedbacks of each trainee are used by core committee for revision and up gradation of the qualification. The curriculum review and updates, in consultation with industries and expert of respective domain, NOS approved by NSDA will also be referred from time to time

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 QF is a specialised tool training in CAD package and there is no higher level qualification found available in the NQR at present

SECTION 5

EVIDENCE OF INTERNATIONAL COMPARABILITY

List any Comparisons which have been established - NIL