

**RESPONSE FROM CAPE PENINSULA UNIVERSITY OF TECHNOLOGY IN TERMS OF  
DEFERRALS REGARDING CATEGORY B QUALIFICATIONS**

**NDMCHE: DIPLOMA IN MECHANICAL ENGINEERING**

**DATE OF RE-SUBMISSION: 24 APRIL 2015**

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**COMMENTS RECEIVED FROM HEQC (dated 18 March 2015)**

The programme appears to be significantly changed in order to align with the HEQSF. The institution should clarify what changes have been made and how these changes align with the HEQSF but do not equate to more than 50% of the programme design.

**RESPONSE FROM INSTITUTION REGARDING QUERIES**

The current ND: Mechanical Engineering has a total of 25 subjects but students need 24 subjects to graduate (Total SAQA credits of 360). The revised Diploma consists of 23 subjects (Total SAQA credits of 368). The number of subjects has reduced from 25 to 23 due to combining existing subjects and changing the offering from semester to a year offering or moving content from one subject to another. Also, the two in-service training modules (P1 and P2) were reduced to one 60 credit module.

Depending on the electives chosen in year 3, the new **Diploma in Mechanical Engineering** consists of the following subject breakdown:

See [Appendix A](#) for an explanation and more detail

**With Electives 1,2,3 (modified electives)**

Unchanged: 15 subjects = 217 credits (59%)

Modified: 5 subjects = 102 credits (28%)

Added: 3 subject = 49 credits (13%)

**With Elective 4 (elective unchanged)**

Unchanged: 16 subjects = 224 credits (61%)

Modified: 4 subjects = 95 credits (26%)

Added: 3 subject = 49 credits (13%)

**With Elective 5 (new elective added)**

Unchanged: 15 subjects = 217 credits (59%)

Modified: 4 subjects = 95 credits (26%)

Added: 5 subject = 56 credits (15%)

**Definitions for unchanged, modified and added**

For the **unchanged** subjects some subject names were changed but the content remained the same. Or some subjects might have been combined or content moved to another subject but no content change.

For the **modified** subjects these were only partially modified. In other words most of the subject content remained the same as what is currently offered but some subject content moved from one subject to another with a subsequent name change; or some obsolete content was replaced with more relevant up to date content. Although 26 – 28 % of the content was "modified" (depending on the elective), the subject content fundamentally and mostly remained the same.

Only the **“added”** subjects are completely new subjects not offered in the current programme.

**Rationale for changes (modifications) and additions is a combination of the following;**

- 1) Integrate subjects to overcome the criticism of the current programmes, viz. “subjects are offered in isolation”.
- 2) To benefit from the additional time accrued due to offering year subjects as opposed to semester subjects to allow more intervention time to assist unprepared and academically needy students.
- 3) To remove obsolete content and replace it with more relevant/pertinent information.
- 4) To allow more time for some project-based subjects where students historically battle to meet due dates.
- 5) To allow more time for practice-based learning to occur.
- 6) To increase the throughput rates, pass and decrease dropout rate without compromising on quality standards.

Careful thought and consideration was given to achieve the above.

Fundamentally, the current programme content was not changed by more than 50% as illustrated in **Appendix A**, depending on the electives chosen:

With Electives 1,2,3 the qualification is 59% unchanged, with Elective 4 the qualification remains 61% unchanged and with Elective 5 the qualification also remains 59% unchanged.

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Kindly direct any queries pertaining to this re-submission to:

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**Date of re-submission:** 24 April 2015

## APPENDIX A: NDMCHE: DIPLOMA IN MECHANICAL ENGINEERING

MODULE	Credits	Level	YR	Compulsory	Elective	Removed/Added/Modified/Unchanged	YEAR 1		YEAR 2		YEAR 3		TOTAL			EXPLANATION
							Unchanged	Modified	Unchanged	Modified	Unchanged	Modified	Added	Unchanged	Modified	
Engineering Mathematics 1 (MTH155S)	21	5	1	Yes	No	Unchanged	21						21			Current Mathematics 1&2 combined and offered over 1 year.
Engineering Mechanics 1 (EMC150S)	14	5	1	Yes	No	Unchanged	14						14			Current Mechanics 1 but offered over a year
Professional and Technical Communications (PFC150S)	14	5	1	Yes	No	Modified		14					14			Current Communications 1 and Additional work ethics.
Engineering Drawing 1 (MIT150S)	14	5	1	Yes	No	Unchanged	14						14			Current Mechanical Engineering Drawing 1
Engineering Physical Science (PHY153S)	28	5	1	Yes	No	Added					28			28		ECSA knowledge area requirement. Includes fundamental Chemistry and Physics combined.
Mechanical Engineering Manufacturing (MMG150S)	14	5	1	Yes	No	Unchanged	14						14			Current Mechanical Engineering Manufacturing 1 and part of Manufacturing 2 but offered over 1 year. <b>No content change</b>
Computer Skills and Applications (CSA150S)	14	5	1	Yes	No	Unchanged	14						14			Current Computer Skills and Programming 1
<b>Total credits for Year 1</b>							<b>77</b>	<b>14</b>					<b>77</b>	<b>14</b>	<b>28</b>	<b>119</b>
Computer aided design (CAD)	14	6	2	Yes	No	Modified			14				14			Current Computer aided design and part of Design 3 combined and offered over a year. <b>No content change</b>
Applied Mathematics (AMT260S)	14	6	2	Yes	No	Unchanged			14				14			Current Mathematics 3.
Electrotechnology (ELC260S)	14	6	2	Yes	No	Unchanged			14				14			Current Electrotechnology 1 and part of Electrotechnology 2 and offered over 1 year with <b>no content change</b> .
Strength of Materials (STL260S)	14	6	2	Yes	No	Modified			14				14			Current Strength of Materials 2 but offered over 1 year. Name change but <b>no content change</b> .
Steam Plant (STP260S)	14	6	2	Yes	No	Added					14			14		In the existing Curriculum, Steam plant is offered as a chapter within Thermodynamics 2. In the new programme, Steam plant is added as a new subject with part of Thermodynamics 2 content so that students acquire in-depth knowledge on this section.
Mechanical Engineering Design (MED260S)	14	6	2	Yes	No	Unchanged			14				14			Current Design 2 and part of Design 3 combined and offered over 1 year. <b>No content change</b> .
Thermodynamics (APT260S)	14	6	2	Yes	No	Unchanged			14				14			Current Thermodynamics 3 and part of Thermodynamics 2 combined and offered over 1 year. Name change and the rest of content of Thermodynamics 2 moved to Steam plant.
Fluid Mechanics (FDM260S)	14	6	2	Yes	No	Modified			14				14			<b>change</b> .
Mechanics of Machines (MOM261S)	14	6	2	Yes	No	Unchanged							14			Current Mechanics of Machines 2 and part of Mechanics of Machines 3 combined and offered over 1 year. Name change but <b>no content change</b> .
<b>Total credits for year 2</b>								<b>42</b>	<b>42</b>		<b>14</b>	<b>98</b>	<b>14</b>	<b>14</b>	<b>126</b>	
Hydraulics Machines (HDM360S)	14	6	3	Yes	No	Unchanged				14			14			Current Hydraulic Machines. Still a semester course.
Mechanical Engineering Project 3 (MIR360S)	60	6	3	Yes	No	Modified				60			60			Current Mechanical Engineering Practice 1 and 2 reduced to 6 months. Modifications required due to reduced time.
Global Environmental Studies (GES361S)	7	6	3	Yes	No	Added					7			7		Added as a new subject offered in a semester.
Mechanical Engineering Design (MED360S)	14	6	3	Yes	No	Unchanged				14			14			Current Design 3 and still offered in a semester. Name change but no content change.
Applied Strength of Materials (ASM360S)	14	6	3	Yes	No	Unchanged				14			14			Current Applied strength of Materials and part of Strength of Materials 3. Name change but no content change.
<b>Two of the following electives</b>																
Elective 1: Maintenance Engineering (MNE360S)	7	6	3	No	Yes	Modified				7			7			Current Maintenance Engineering 1. Still offered in a semester. Some content moved to steam Plant which will carry some elements of maintenance procedures of the steam power plant.
Elective 2: Production Engineering (PIB360S)	7	6	3	No	Yes	Modified				7			7			Currently is offered as Production Engineering 1. Still offered in a semester. Some introductory content moved to Mechanical Engineering Manufacturing.
Elective 3: Electrotechnology 3 (ELC360S)	7	6	3	No	Yes	Modified				7			7			Current Electrotechnology 3 and part of Electrotechnology 2. Still the same content but reduced lecture hours and increased
Elective 4: Advanced Mechanical Engineering Manufacturing	7	6	3	No	Yes	Unchanged				7			7			Current Engineering Manufacturing 3 (CNC) and part of Manufacturing 2 as an introduction to this course. Still a semester course.
Elective 5: Control Systems Engineering (CSE360S)	7	6	3	No	Yes	Added				7				7		Added as a new subject offered in a semester.
Total credits for year 3 if selecting Elective 1,2,3												42	74	7	123	
Total credits for year 3 if selecting Elective 4												49	67	7	123	
Total credits for year 3 if selecting 5												42	67	14	123	
<b>Total credits for the qualification:</b>							<b>If Selecting Electives 1,2,3</b>					217	102	49	368	
							<b>If selecting Elective 4</b>					59%	28%	13%	100%	
							<b>If selecting Elective 5</b>					224	95	49	368	
												61%	26%	13%	100%	
												217	95	56	368	
												59%	26%	15%	100%	