



# THE GUIDELINES

## DESIGN III / General Arrangement & Safety Plan

**Authors:**  
Design III lecturers

**DEPARTMENT OF MARINE ENGINEERING  
FACULTY OF MARINE TECHNOLOGY - ITS  
2018**

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SUBJECT  
:

DESIGN III / GENERAL  
ARRANGEMENT &  
SAFETY PLAN

DOCUMENT  
TITLE :

THE GUIDELINES FOR  
DESIGN III / GENERAL  
ARRANGEMENT &  
SAFETY PLAN

DOCUMENT  
NO :

01/D3-GFS/II/2018

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*This design manual is a guidelines for educational purposes only. The authors do not recommend this guidelines for industrial and commercial purposes. The author is not liable in the event of any accident resulting from the use of this manual for industrial and commercial applications.*

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## 1. PENDAHULUAN / OVERVIEW

Panduan ini bertujuan sebagai pedoman mata kuliah Desain III : General Arrangement, Fire Control & Safety Plan ( ME184624). Pedoman ini terdiri dari 3 bagian utama:

1. Prosedur
2. Laporan
3. Standar dokumentasi

The guidelines is intended as a guide for Design III :General Arrangement, Fire Control & Safety Plan (ME184624). It consists of 3 main sections:

1. Procedures
2. Reports
3. Standard of documentation

## 2. PROSEDUR / PROCEDURE

Prosedur dalam pengambilan mata kuliah Desain III : General Arrangement, Fire Control & Safety Plan (ME184624) secara garis besar dapat dilihat pada **Lampiran B**.

The procedures for Design III : General Arrangement, Fire Control & Safety Plan (ME184624), generally can be seen in **Appendix B**.

### 2.1 Mata Kuliah Pra-syarat

Mahasiswa harus mengambil mata kuliah pra-syarat berikut sebelum mengambil Desain III (ME141326) dan General Arrangement, Fire Control & Safety Plan (ME141603). Berikut adalah mata kuliah pra-syarat:

1. Teori Bangunan dan Konstruksi Kapal I
2. Teori Bangunan dan Konstruksi Kapal II

### 2.1 Pre-Requisite courses

Students must take the following pre-requisite courses before taking Design III ( ME141326) General Arrangement, Fire Control & Safety Plan. Here are the pre-requisites:

1. Shipbuilding & Construction I
2. Shipbuilding & Construction II
3. Design I (Regular & LJ)
4. Design II (Regular)
5. Ship Resistance & Propulsion

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3. Design I (Regular & LJ)
4. Design II (Regular)
5. Ship Resistance & Propulsion
6. Marine Diesel & Propulsion Systems

Bagi mahasiswa yang mengambil Mata kuliah Desain III tanpa lulus mata kuliah pra-syarat / diambil rangkap **TIDAK DIPERBOLEHKAN** kecuali mendapat ijin dari Dosen Wali, Dosen Koordinator D3, Sekprodi dan Kaprodi. Mahasiswa tersebut juga wajib untuk membuat surat pernyataan yang berisi :

1. Tidak akan meng-drop Mata kuliah Desain III dan aktif mengikuti perkuliahan. Dibuktikan dengan bukti kehadiran di kelas Minimal 80% dan bukti asistensi di logbook sebanyak Minimal 14 kali.
2. Berisikan Tanda tangan mahasiswa tersebut, Dosen Wali, Dosen Koordinator Desain yang rangkap, Sekprodi dan Kaprodi.  
Bila Mahasiswa tersebut tidak memenuhi persyaratan diatas maka mahasiswa akan mendapat konsekuensi

6. Marine Diesel & Propulsion Systems

For the student who undertake Design III without passed from the pre-requisiets course or taking the pre-req simultaneously, Those student are **NOT ALLOWED** to continue. Except there is a written consent / statement letter and signed from the Student guardian, D3 Coordinator, Secretary of study programme and Head of Study Programme. The student also required to make a Statement Letter with the point of :

1. The student Will not drop Design III Course and actively participate in class and assitance. Evidenced by proof of attendance at least 80% of class and proof of assistance in a logbook of at least 14 times.
2. Have a signature from those student, student guardian, Design Coordinator that the student took simultaneously, Secretary of study programme and Head of Study Programme  
If the student are unable to fulfill those



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yang sama dengan **No Point of Return** Policy.

## 2.2 Pelaksanaan Pekerjaan

Dalam pengerjaan tugas Desain III/ General Arrangement, Fire Control & Safety Plan mahasiswa mengerjakan secara Individu dalam satu Tim yang dibimbing oleh dosen pembimbing.

2.2.1 Dosen Pembimbing  
Dosen pembimbing terdiri dari Dosen Departemen Teknik Sistem Perkapalan

2.2.2 Deliverable  
Tim harus menyerahkan dokumen berupa:

- Laporan General Arrangement
- Laporan Fire Control & Safety Plan

catatan:  
(termasuk: gambar, lampiran yang mana telah disetujui oleh dosen pembimbing dan dosen koordinator) pada saat UAS

2.2.3 Monitoring  
Selama proses pengerjaan 16 minggu, ada 3 kali monitoring progress.

- Progress I (Week 7)

requirement, then they will have the same consequence as **No Point of Return** Policy.

## 2.2 Project Execution

The student works individually in a Team supervised by Supervisor Lecturer to finish Design III/ General Arrangement, Fire Control & Safety Plan.

2.2.1 Supervisors  
The supervisor consists of Department of Marine Engineering lecturer.

2.2.2 Deliverable  
The team must deliver documents of:

- Report of General Arrangement
- Report of Fire Control & Safety Plan

Note:  
(including: drawing, attachments which have been approved by the supervisor and coordinator) at the Final Examination

2.2.3 Monitoring  
There are 3 times monitoring progress for 16 weeks.

- Progress I (Week 7)

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- Progress II (Week 12)
- Progress III (Week 16 + UAS)

**Sudden death penalty:**

Jika individu tidak mampu menyelesaikan target pada setiap monitoring, maka tidak diperkenankan untuk melanjutkan ke tahap berikutnya.

**No Point of Return:**

Bila ada mahasiswa yang melakukan "Drop" mata kuliah dan tidak menyelesaikan. Maka tidak akan diperkenankan untuk mengambil mata kuliah ini pada semester depannya.

- Progress II (Week 12)
- Progress III (Week 16 + Final Exam)

**Sudden death penalty:**

If the individual is unable to complete the target on each monitoring, they are not allowed to proceed to the next stage.

**No Point of Return:**

Once decided to take this course, it must be finished. Those who quit / drop from this course by him/herself will not be allowed to take in the next consecutive semester.

### 3. LAPORAN / REPORT

Struktur laporan Design III / General Arrangement, Fire Control & Safety Plan terdiri dari 3 bagian utama, yaitu:

- a. Filosofi Desain
- b. Rules & Guildelines yang digunakan
- c. Detail Perhitungan
- d. Lampiran (Spect, Drawing, dll)

The structure of Design III / General Arrangement, Fire Control & Safety Plan, consists of 3 main parts, namely i.e.:

- a. Design Philosophy
- b. Rules & Guidelines used in those chapter
- c. Detail of Calculation
- d. Attachment (Spect, Drawing, etc)

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### 3.1 Filosofi Desain

Laporan General Arrangement terdiri dari 11 dokumen / filosofi desain, yaitu:

1. Estimation of the Ship Resistance & Engine Selection
2. Calculation of Gross Tonnage, Amount of Crew, Fresh Water, Fuel Oil and Lubricant
3. Calculation of Tank Capacity & Pay load
4. Calculation of the Machinery of Anchor, Windlas, Rudder, Loading-Unloading , and Weight of the Construction and Machineries
5. Loading-Unloading System based on the Cargo and Hatch Cover
6. Crew Explanation
7. Room Arrangement
8. Navigation Equipments & Lights Arrangement
9. Calculation of Chain Locker Volume & Mud Box
10. Arrangement of the Fire Control Plan
11. Arrangement of the Safety Plan

Lihat **Lampiran A** untuk outline penulisan report.

### 3.1 Design Philosophy

The report of General Arrangement consist of 11 documnets / design philosophy, namely i.e.:

1. Resistance & Engine Selection
2. Calculation of Gross Tonnage, Amount of Crew, Fresh Water, Fuel Oil and Lubricant
3. Calculation of Tank Capacity & Pay load
4. Calculation of the Machinery of Anchor, Windlas, Rudder, Loading-Unloading , and Weight of the Construction and Machineries
5. Loading-Unloading System based on the Cargo and Hatch Cover
6. Crew Explanation
7. Room Arrangement
8. Navigation Equipments & Lights Arrangement
9. Calculation of Chain Locker Volume & Mud Box
10. Arrangement of the Fire Control Plan
11. Arrangement of the Safety Plan

See **Appendix A** for writing report outline.

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### 3.2 Detail Perhitungan

Detail perhitungan merupakan pendukung dari isi filosofi desain. Detail perhitungan ditulis dalam *format spreadsheet* (Ms. Excel). Detail Perhitungan tambahan dapat ditambahkan apabila diperlukan. Detail perhitungan terdiri dari (minimal):

- daftar code / referensi yang digunakan
- algoritma perhitungan
- input parameter desain (given parameter)
- output parameter desain
- detail perhitungan / deskripsi

Format detail perhitungan dapat dilihat **Lampiran A**

### 3.3 Lampiran

#### 3.3.1 Spesifikasi

Lampiran spesifikasi dapat berupa brosur, catalog engine, aturan yang digunakan.

#### 3.3.2 Gambar

Gambar yang akan dikumpulkan adalah:

- Gambar General Arrangement Kapal. Tampak Depan, Tampak Atas (Terdiri dari masing-masing deck dan

### 3.2 Detail of Calculation

Detail of calculation supports the content of the design philosophy. The calculation details are written in *format spreadsheet* (Ms. Excel). Additional calculations may be added when considered necessary. Detail of calculation consist of (at least):

- list of code / reference
- calculation algorithm
- input of parameter design (given parameter)
- output of parameters design
- detail of calculation / description

See **Appendix A** for format of calculation detail.

### 3.3 Attachment

#### 3.3.1 Specification

The attachment for specification can be brochure, engine project guide, rules & regulations, etc.

#### 3.3.2 Drawing

The drawing to be submitted are:

- General Arrangement Plan. Front View, Top View (Consists of each deck

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- kompartemen kapal),  
Tampak Samping  
Fire Control Plan dan  
Safety Plan

- and compartment of the  
vessel), and Side View  
Fire Control Plan and  
Safety Plan

Simbol yang digunakan pada gambar harus konsisten untuk semua gambar. Disarankan untuk merefer pada standar tertentu (JIS, DIN, ISO dll.)

The symbols used in the drawing must be consistent for all images. It is recommended to refer to certain standards (JIS, DIN, ISO etc.)

Format gambar data dilihat pada **lampiran A**

See **Appendix A** for format of drawing.

3.3.3 Lain-lain  
Bila ada lampiran tambahan yang diperlukan untuk mendukung detail perhitungan.

3.3.3 Others  
If any additional attachments are required to support detail of calculations.

#### 4. STANDAR DOKUMENTASI / STANDARD OF DOCUMENTATION

##### 4.1 Format Penulisan Laporan

- Ukuran kertas adalah B5, dengan berat minimal 70 gr.
- Left margin 2,5 cm; top margin 2 cm; right margin 1 cm; bottom margin 2 cm.
- Font standar yang digunakan adalah **Franklin Gothic Book**. Font lain dapat digunakan untuk formula atau lambang lain yang spesifik.
- Besar Font:

##### 4.1 Format of Writting

- The paper size is B5, weighing at least 70 grams.
- Left margin 2,5 cm; top margin 2 cm; right margin 1 cm; bottom margin 2 cm.
- The standard font is the **Franklin Gothic Book**. Other fonts can be used for formulas or other specific symbols.
- The size of font:
  - Title CHAPTER uses capital letters with 14 pt font size.

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- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>i. Judul BAB menggunakan huruf kapital dengan ukuran font 14 pt.</li> <li>ii. Judul Seksi dari tiap bab menggunakan ukuran font 12 pt.</li> <li>iii. Judul sub seksi dari tiap bab menggunakan ukuran font 11 pt.</li> <li>iv. Isi dari bab menggunakan font ukuran 11 pt.</li> </ul> | <ul style="list-style-type: none"> <li>ii. The section title of each chapter uses a 12 pt font size.</li> <li>iii. The sub-section title of each chapter uses the 11 pt font size.</li> <li>iv. The contents of the chapter use a 11 pt size font.</li> </ul> |
| <ul style="list-style-type: none"> <li>e. Spasi             <ul style="list-style-type: none"> <li>i. Spasi yang digunakan untuk penulisan laporan adalah 1 (satu) spasi.</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>e. Spacing             <ul style="list-style-type: none"> <li>i. The spacing for report writing is 1 (one) spacing.</li> </ul> </li> </ul>   |

#### **4.2 Format Gambar**

- a. Ukuran kertas gambar kerja adalah A1 (594 mm x 841 mm)
- b. garis tepi gambar adalah 20 mm dari tepi kertas
- c. skala gambar disesuaikan dengan ukuran kertas
- d. kepala gambar berukuran 120 mm x 60 mm

#### **4.2 Format of Drawing**

- a. The size of the drawing paper is A1 (594 mm x 841 mm)
- b. the border of the drawing is 20 mm from the edge of the paper
- c. scale of drawing adjusted to paper size
- d. Head of drawing is 120 mm x 60 mm

#### **4.3 Soft Copy**

- Semua pekerjaan harus diserahkan ke koordinator dalam bentuk soft copy sebelum ujian dimulai. Semua pekerjaan disimpan dalam CD yang terdiri dari :
- a. Seluruh pekerjaan yang disimpan dalam satu file

#### **4.3 Soft Copy**

- All documents must be submitted to the coordinator in soft copy before the examination. All documents is stored on a CD consisting of:
- a. All work stored in one file in **PDF** format, which consists of:
    - i. Design philosophy

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- dalam format **PDF**, yang terdiri dari:
- i. Filosofi desain
  - ii. Detail Perhitungan
  - iii. Gambar Desain
- b. Seluruh pekerjaan dalam format **asli**:
- i. Filosofi desain dalam bentuk word
  - ii. Detail Perhitungan dalam format excel, spesifikasi peralatan dalam file html, pdf atau format lain
  - iii. Gambar Desain dalam bentuk autocad.
- c. Satu CD = Hasil satu kelompok
- ii. Detail of calculation
  - iii. Drawing for all arrangement
- b. All work in **native** format:
- i. Design philosophy in word form
  - ii. Detail of calculation in excel format, equipment specifications in html, pdf or other format.
  - iii. All of drawings in autocad format.
- c. One CD is for one group

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## **LAMPIRAN A** **APPENDIX A**

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**Contoh Format Front Cover / Template of Front Cover**



**For Report of General Arrangement, Fire Control & Safety Plan**

	<p><b>DEPARTEMEN TEKNIK SISTEM PERKAPALAN</b>  <b>FAKULTAS TEKNOLOGI KELAUTAN</b>  <b>INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)</b>  <b>SURABAYA</b></p>
<p><i>(Arial 14 pt utk Dept Teknik Sist Perkapalan &amp; 12 pt utk FTK, ITS, Surabaya)</i></p>	
<p><b>Design III – ME 184624</b> <i>(Arial, 16pt)</i>  <b>Rencana Umum, Fire &amp; Safety Plan</b> <i>(18pt)</i>  <b>SEMESTER GANJIL/GENAP 20XX</b> <i>(12 pt)</i></p>	
<p><b>NAMA KAPAL</b> <i>(14pt)</i>  <b>CLASS NOTATION</b> <i>(14pt)</i></p>	
<p><b>MAHASISWA:</b> <i>(12pt)</i>  <b>NAMA MAHASISWA</b> <i>(12pt)</i>  <b>NRP.</b> <i>(12pt)</i></p>	
<p><b>DOSEN PEMBIMBING:</b> <i>(12pt)</i>  <b>NAMA PEMBIMBING</b> <i>(12pt)</i>  <b>NIP.</b> <i>(12pt)</i></p>	<p><i>Catatan:</i></p> <ol style="list-style-type: none"> <li>1. Warna dasar cover adalah putih.</li> <li>2. Warna garis dibawah logo ITS yaitu: <ul style="list-style-type: none"> <li>- Biru untuk pengambilan ke-1.</li> <li>- Kuning untuk pengambilan ke-2.</li> <li>- Merah untuk pengambilan ke-3.</li> <li>- Hitam untuk pengambilan ke-4.</li> </ul> </li> </ol>
<div> <div>1<sup>st</sup></div> <div>2<sup>nd</sup></div> <div>3<sup>rd</sup></div> <div>4<sup>th</sup></div> </div>	

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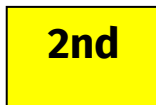
**For Report of General Arrangement & Safety Plan (Double Degree Program)**

	<p><b>DEPARTMENT OF MARINE ENGINEERING</b>  <b>FACULTY OF MARINE TECHNOLOGY</b>  <b>INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)</b>  <b>SURABAYA</b></p>
<p><i>(Arial 14 pt For Dept. Of Marine Engineering &amp; 12 pt for faculty, ITS, Surabaya)</i></p>	
<div style="background-color: blue; height: 30px;"></div>	
<p><b>Design III – ME 184624</b> <i>(Arial, 16pt)</i>  <b>General Arrangement, Fire &amp; Safety Plan</b>  <i>(18pt)</i>  <b>ODD/EVEN SEMESTER 20XX</b> <i>(12 pt)</i></p>	
<p><b>NAME OF SHIP</b> <i>(14pt)</i>  <b>CLASS NOTATION</b> <i>(14pt)</i></p>	
<p><b>STUDENT:</b> <i>(12pt)</i>  <b>STUDENT NAME</b> <i>(12pt)</i>  <b>NRP.</b> <i>(12pt)</i></p>	
<p><b>SUPERVISOR:</b> <i>(12pt)</i>  <b>SUPERVISOR NAME</b> <i>(12pt)</i>  <b>NIP.</b> <i>(12pt)</i></p>	
	

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## Notes:

1. Background cover color is White.
2. The line under the ITS logo have the color of:
  - Blue for 1<sup>st</sup> attempt.
  - Yellow for 2<sup>nd</sup> attempt.
  - Red for 3<sup>rd</sup> attempt.
  - Black for 4<sup>th</sup> attempt.
  -



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**Contoh Format Cover (Batas Setiap Dokumen) / Template of Cover In each Document**



**For inside Chapter Report Cover**

	<p><b>DESIGN III – GENERAL ARRANGEMENT &amp; SAFETY PLAN</b>  <b>DEPARTMENT OF MARINE ENGINEERING</b>  (font : FRANKLIN GOTHIC BOOK 14pt)</p>																				
<p><b>JUDUL DOKUMEN / TITTLE OF DOCUMENT (e.g. Room Arrangement)</b>  <b>(font : FRANKLIN GOTHIC BOOK 24pt BOLD)</b></p> <p>Doc.No. 01 - 42 VV YYZZ - RP  (font : FRANKLIN GOTHIC BOOK 12 pt)</p> <p>(Font FRANKLIN GOTHIC BOOK 10 pt)</p>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Rev.</th> <th style="width: 10%;">Date</th> <th style="width: 30%;">Remark</th> <th style="width: 20%;">Prepared by Name of Student (signed)</th> <th style="width: 30%;">Approved by Name of Supervisor (signed)</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		Rev.	Date	Remark	Prepared by Name of Student (signed)	Approved by Name of Supervisor (signed)															
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**for Double Degree Program**

 	<p>DESIGN III – GENERAL ARRANGEMENT &amp; SAFETY PLAN  DOUBLE DEGREE ON MARINE ENGINEERING  ITS – HOCHSCHULE WISMAR  (font : FRANKLIN GOTHIC BOOK 14pt)</p>																				
<p><b>JUDUL DOKUMEN / TITTLE OF DOCUMENT (e.g. Room Arrangement)</b>  <b>(font : FRANKLIN GOTHIC BOOK 24pt BOLD)</b></p> <p>Doc.No. 01 - 42 XX YYZZ – RP  (font : FRANKLIN GOTHIC BOOK 12 pt)</p> <p>(XX = Student year, YY = Student Degree code (Reguler, LJ, Double Degree), ZZ = Student number)  (Font FRANKLIN GOTHIC BOOK 10 pt)</p>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Rev.</th> <th style="width: 15%;">Date</th> <th style="width: 20%;">Remark</th> <th style="width: 30%;">Prepared by Name of Student (signed)</th> <th style="width: 25%;">Approved by Name of Supervisor (signed)</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		Rev.	Date	Remark	Prepared by Name of Student (signed)	Approved by Name of Supervisor (signed)															
Rev.	Date	Remark	Prepared by Name of Student (signed)	Approved by Name of Supervisor (signed)																	



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### Contoh Penulisan Laporan / Template of Writing Report

	<b>NAME OF SYSTEM</b> (14pt Franklin Gothic Book)	Doc. No.	01 - 42 XX YYYY - RP
		Rev. No.	BB
		Page	CC of DD

**I. INTRODUCTION (12pt Franklin Gothic Book)**  
 There are various crew in a ship whereas each crew have a position and task according to their job. These documents will be explaining what are the tasks for each crew and how many person for the ship needed for the tasks.  
 (11 Franklin Gothic Book)

**II. OBJECTIVES**  
 The things that we must understand about Ships Crew are:

1. Understand the Task of the crew in a ship.
2. Calculate the amount of crew based on the regulations according to "Peraturan Pemerintah".

**III. REFERENCES**

1. BKI Volume III for Machinery Installations 2016 Edition
2. Peraturan Pemerintah
3. MLC


**IV. LIST OF ABBREVATIONS**  
 (if any)

**V. CHAPTER DESCRIPTION**  
 (explanation of crew & its purpose)

**VI. DESIGN REQUIREMENTS**

No.	Key Equipment	Reference	Parameter Design
1.	Officer Rooms	SOLAS Chapter	Rooms of officer minimum size =
2.	Boatswain Rooms	SOLAS Chapter	Rooms of Boatswain minimum size =

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	<b>NAME OF SYSTEM</b> (14pt Franklin Gothic Book)			Doc. No.	01 - 42 XX YYYY - RP		
				Rev. No.	BB		
				Page	CC of DD		
3	etc	etc	etc				
VII. SUMMARY OF CALCULATION (if any)							
VIII. DETAIL OF CALCULATION See attachment of Doc.No. 01 - 42 XX YYYY - RP							
IX. SPECIFICATION OF EQUIPMENTS See attachment of Doc.No. 01 - 42 XX YYYY - RP							
X. DRAWING OF SYSTEM See attachment of Dwg.No. 01 - 42 XX YYYY - RP							

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### Contoh Standar Gambar / Template of Drawing Standar

	A	B	C	D	E	F
9						
8						
7						
6						
5						
4						
3						
2						
1						
	A	B	C	D	E	F

STANDAR OF DRAWING


100.01	FO Transfer Pump	10.2.2018	13.04.18
Equip ID	NAME	SPEC	


NEPALA GAMBAR


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**Contoh Standar Kepala Gambar / Template of Head of Drawing Standar**

**\* If the result is not suitable with your scale, Adjust / modify it**

4,8		25,3	
3,8		DEPARTMENT OF MARINE ENGINEERING INSTITUT TEKNOLOGI SEPULUH NOPEMBER	
4,4	(Your ship name)	EVEN SEMESTER 2017/2018	3,8
5		Prepared by : (name of student)	Signature
		Supervisor : (supervisor name)	Signature
1,9	General Arrangement	Coordinator : (Name of coordinator)	Signature
3,8	Scale 1 : 250	Class Notation :	Dwg no. 01 - XX YY ZZ - GA
10	12,5	3,8	1,9

4,8		25,3	
3,8		DEPARTMENT OF MARINE ENGINEERING INSTITUT TEKNOLOGI SEPULUH NOPEMBER	
4,4	(Your Ship Name)	EVEN SEMESTER 2017/2018	3,8
5		Prepared by : (name of student)	Signature
		Supervisor : (supervisor name)	Signature
1,9	FIRE & SAFETY PLAN	Coordinator : (name of coordinator)	Signature
3,8	Scale 1 : 250	Class Notation :	Dwg no. 02 - XX YY ZZ - FSP
10	12,5	3,8	1,9

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**LAMPIRAN B – Business Process**  
**APPENDIX B – Business Process**



# DESIGN III GENERAL ARRANGEMENT, FIRE CONTROL & SAFETY PLAN

## GUIDELINES

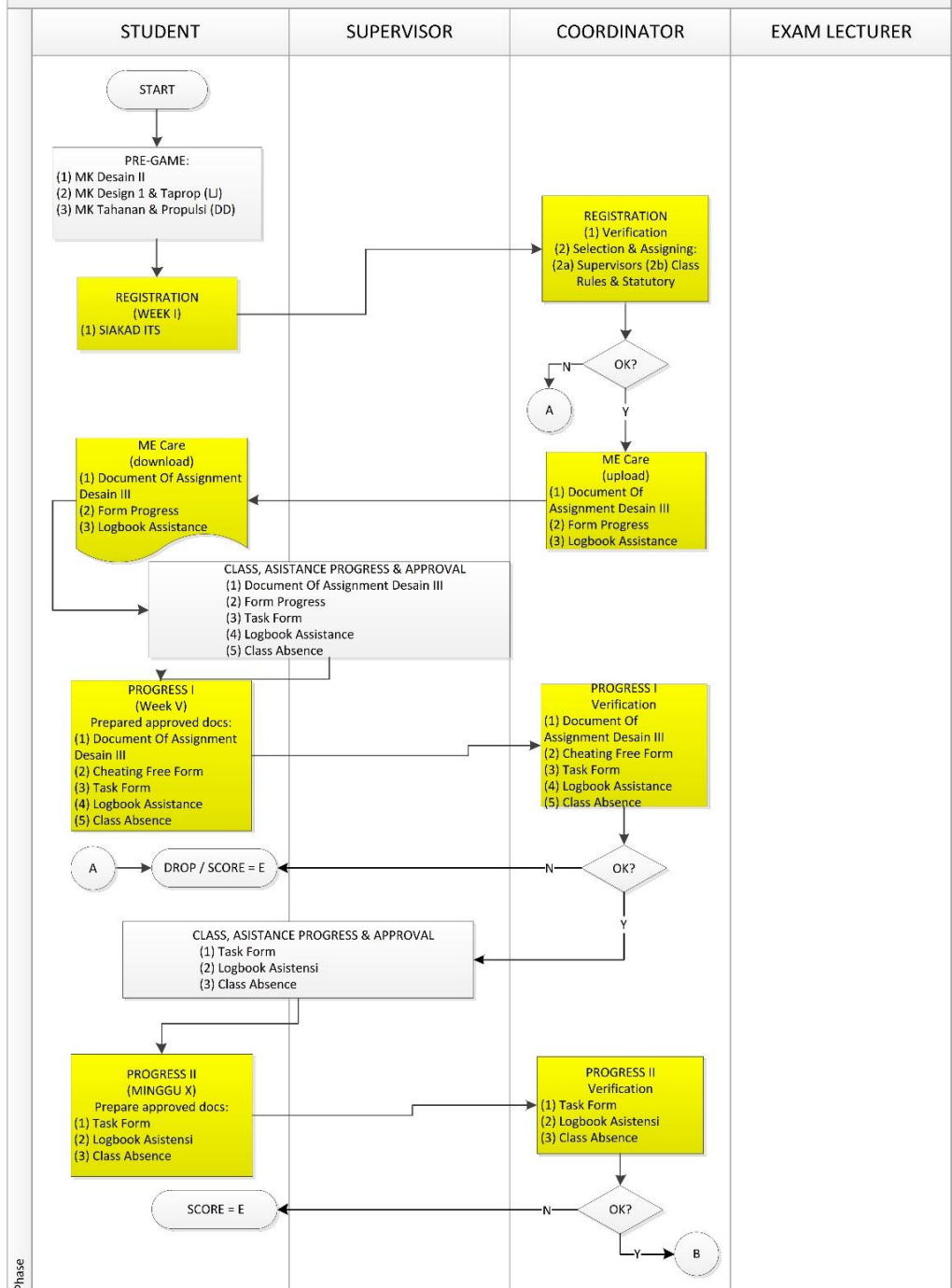
Doc. No 01/ D3-GFS/II/2018

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### DTSP - BUSINESS PROCESS MK DESAIN III (page 1)





# DESIGN III GENERAL ARRANGEMENT, FIRE CONTROL & SAFETY PLAN

## GUIDELINES

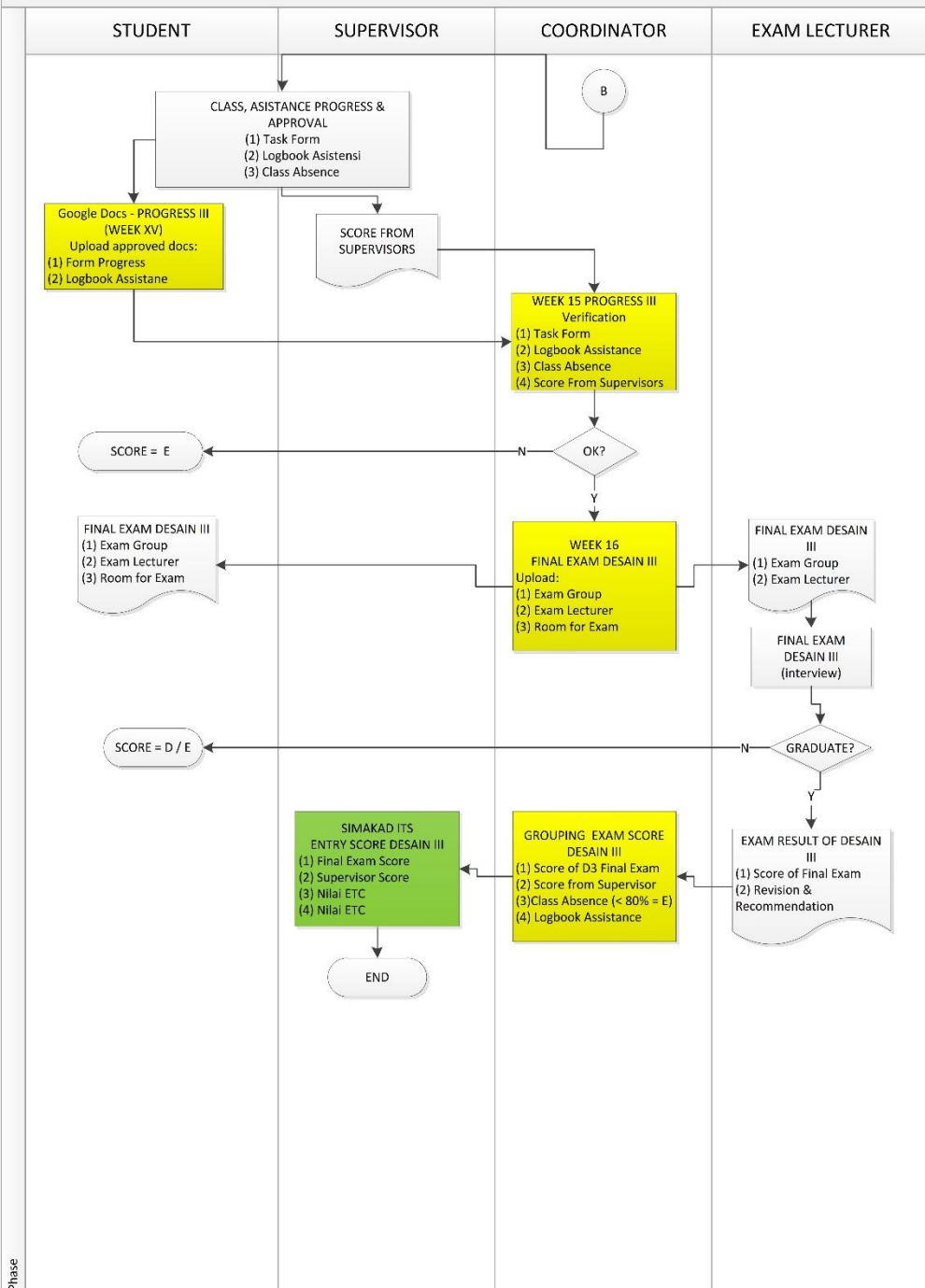
Doc. No 01/ D3-GFS/II/2018

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### DTSP - BUSINESS PROCESS MK DESAIN (page 2)







**DESIGN III**  
**GENERAL ARRANGEMENT,  
FIRE CONTROL & SAFETY PLAN**

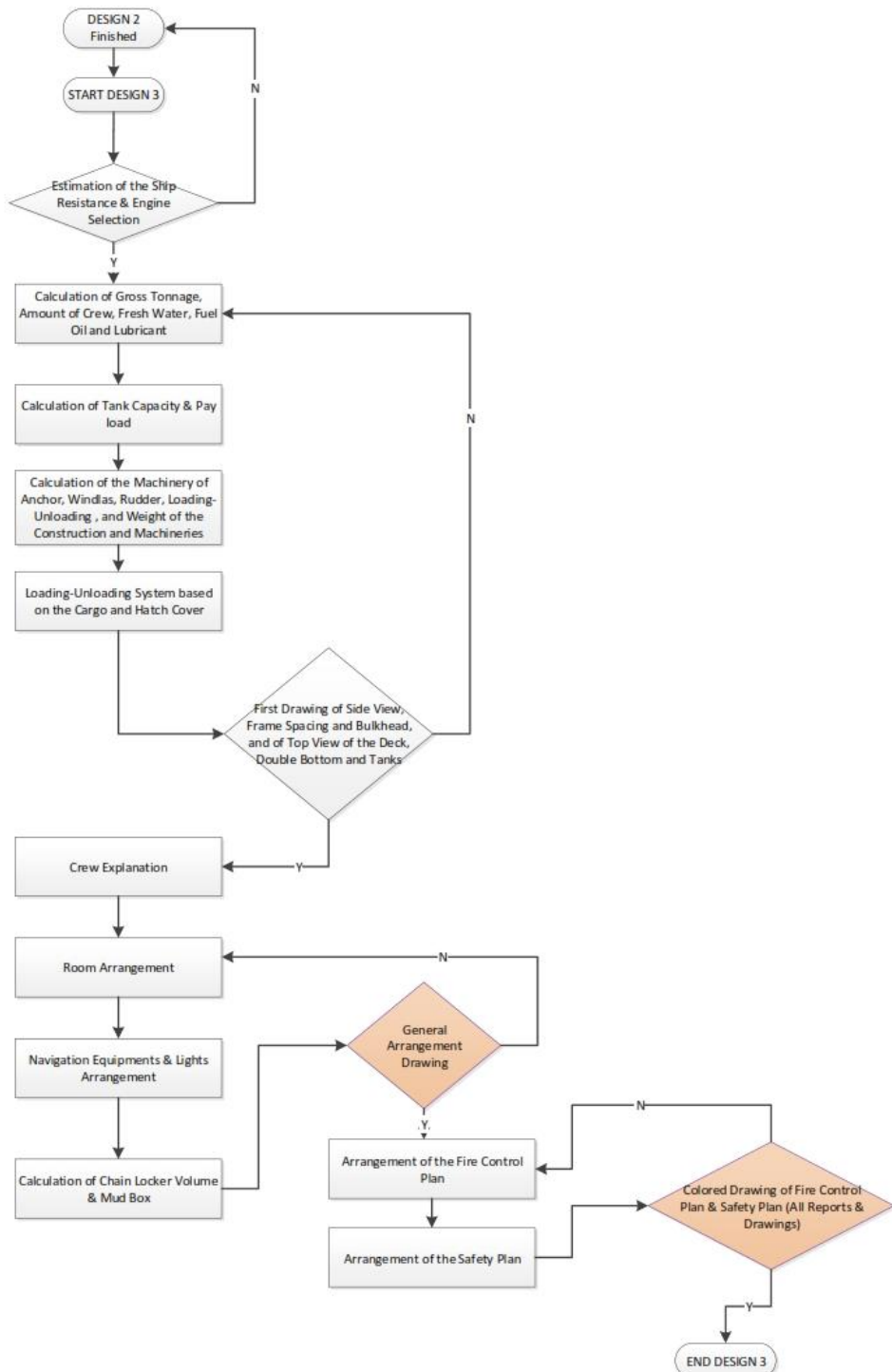
**GUIDELINES**

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**LAMPIRAN C – Form D3**  
**APPENDIX C – Design 3 Forms**

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## GUIDELINES

Date: September 2018




Feb. 2017

1. I, myself has been working and finishing the Design-III Tasks with **MY OWN Effort and Hardwork**.
2. I **am**, either intentional or unintentional **DID NOT Copy** the softcopy / hardcopy of the Design-III Tasks from Other People.
3. I **am**, either intentional or unintentional **WILL NOT Copy** my Design-III Work to Other Student
4. I will not **Forge** the supervisor and/or the coordinator sign in all of my Design-III
5. If I **am VIOLATING** one of those previous points, then I am willing to be given **PUNISHMENT** according to Academic Regulations in ITS, which is the **ANNULMENT of ONE SEMESTER**

( )  
Nrp.

	<b>DESIGN III</b> <b>GENERAL ARRANGEMENT,</b> <b>FIRE CONTROL &amp; SAFETY PLAN</b>	Doc. No 01/ D3-GFS/II/2018	
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	<b>DEPARTMENT OF MARINE ENGINEERING – ITS</b> <b>DESAIN III : GENERAL ARRANGEMENT &amp; SAFETY</b> <b>PLAN</b> <b>DOCUMENT OF ASSIGNMENT</b>		<b>FORM 01</b>							
	Semester : Odd / Even	Year :	Rev2	Feb. 2017						
	<b>STUDENT DATA</b>									
Name of Student										
Student's Register No.										
Name of Supervisor										
Number of Attempt(s)										
<b>VESSEL DATA</b> <i>(referring to Propeller &amp; Shafting Arrangement Assignment Data)</i>										
Vessel Name	:	Type of Ships	:							
Cargo Type	:	Cargo Capacity (Ton / kL / TEUs *)	:							
Class Notation (ref to Class Rules Vol 1)	:	Sailing Area (ref to SOLAS Chap. IV)	:							
Endurance (Day)	:	LPP (m)	:							
Service Speed (knot)	:	B (m)	:							
Cb	:	T (m)	:							
Main Engine Spesification										
Gear Box Spesification										
Propeller Spesification										
Flag State										
Classification Society	BKI/ ABS / LR / GL / BV / NK *)									
Statutory	Solas CH-2/II, Fire Safety Code, STCW dan ILO Tonnage Measurement Convention 1969									
<b>TASK DATA</b>										
General Arrangement	Calculation and Drawing of General Arrangement according to Statutory and Class									
Capacity Plan	Calculation and Drawing of Capacity Plan according to the operational design of the ships, and also compliance with the rules & guidelines of Class and Statutory									
Safety & Fire Control Plan	Calculation and Drawing of Safety & Fire Control Plan according to the operational design of the ships, and also compliance with the rules & guidelines of Class and Statutory									
Reports Drawing	Every chapter on Reports needs to be written in English									
<table border="1" style="width: 100%;"> <tr> <td style="width: 33%;">Student</td> <td style="width: 33%;">Supervisor</td> <td style="width: 33%;">Desain III Coordinator</td> </tr> <tr> <td style="height: 40px; vertical-align: bottom;">           ()            NRP.         </td> <td style="height: 40px; vertical-align: bottom;">           ()            NIP.         </td> <td style="height: 40px; vertical-align: bottom;">           (Ede Mehta Wardhana., S.T, M.T)            NIP. 1992201711048         </td> </tr> </table>					Student	Supervisor	Desain III Coordinator	() NRP.	() NIP.	(Ede Mehta Wardhana., S.T, M.T) NIP. 1992201711048
Student	Supervisor	Desain III Coordinator								
() NRP.	() NIP.	(Ede Mehta Wardhana., S.T, M.T) NIP. 1992201711048								


\*) Erase the part/s that not needed.

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		DESAIN III: GENERAL ARRANGEMENT & SAFETY PLAN (ME 141326) TASK FORM			FORM 02			
					Rev 2	Feb-17		
NO	NOMOR DOCUMENT / DRAWING	ITEM DOCUMENT / DRAWING	CHECK LIST	TARGET	SIGNED SUPERVISOR	SIGNED COORDINATOR		
1	Doc. No. 01 - 42 13 101 005 - RE	Estimation of the Ship Resistance & Engine Selection		Week 4				
2	Doc. No. 02 – 42 13 101 005 - GT	Calculation of Gross Tonnage, Amount of Crew, Fresh Water, Fuel Oil and Lubricant						
3	Doc. No. 03 – 42 13 101 005 - TC	Calculation of Tank Capacity & Pay load		Week 6				
4	Doc. No. 04 - 42 13 101 005 - AM	Calculation of the Machinery of Anchor, Windlas, Rudder, Loading-Unloading , and Weight of the Construction and Machineries						
5	Doc. No. 05 - 42 13 101 005 - CH	Loading-Unloading System based on the Cargo and Hatch Cover						
6	Dwg. No. 01 – 4213 101 005 – GA	Drawing of Side View, Frame Spacing and Bulkhead		Week 7				
7	Dwg no. 01 – 42 13 101 005 – GA	Drawing of Top View of the Deck, Double Bottom and Tanks						
PROGRESS I : (Until Tank Capacity Plan & Cargo Capacity Plan)								
8	Doc. No. 06 - 42 13 101 005 - CF	Crew Explanation		Week 12				
9	Doc. No. 07 – 42 13 101 005 - RP	Room Arrangement						
10	Doc. No. 08 – 42 13 101 005 - NA	Navigation Equipments & Lights Arrangement						
11	Doc. No. 09 – 42 13 101 005 - CV	Calculation of Chain Locker Volume & Mud Box						
12	Dwg no. 01 - 42 13 101 005 – GA	General Arrangement Drawing						
PROGRESS II : Until General Arrangement								
13	Doc. No.10-4213 101 005-FP	Arrangement of the Fire Control Plan		Week 15				
14	Doc. No.11-42 13 101 005-SP	Arrangement of the Safety Plan						
15	Dwg no. 02 - 42 13 101 005 – FSP	Colored Drawing of Fire Control Plan & Safety Plan (All Reports & Drawings)						
PROGRESS III : Until Safety & Fire Plan								
Final Evaluation (Week 16)								

\* YY=Year Class    ZZZ= Last 3 digit of your NRP

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	<b>DESAIN III: RENCANA UMUM DAN SAFETY PLAN</b> <b>LATE REGISTRATION FORM DOCUMENTS</b>		<b>FORM 03</b>	
			Rev. 02	
			Feb. 2017	

Semester _____	Year _____
Name _____	NRP _____
Supervisor _____	NIP _____

**Write your reason why you are late to apply for the DESIGN-III Course**

Surabaya,


Student	Supervisor Lectuer
( _____ )	( _____ )
NRP.	NIP.

Head of Undergraduate Programme

( \_\_\_\_\_ )

NIP.

	<b>DESIGN III</b> <b>GENERAL ARRANGEMENT,</b> <b>FIRE CONTROL &amp; SAFETY PLAN</b>		Doc. No 01/D3-GFS/II/2018	
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		<b>DEPARTEMEN OF MARINE ENGINEERING - ITS</b> <b>DESAIN III : GENERAL ARRANGEMENT &amp; SAFETY PLAN</b> <b>ASSISTANCE LOGBOOK</b>													<b>FORM 04</b> Rev 03 Mar/2018	
		<b>STUDENT NAME</b>													<b>ASSITANCE ITEM &amp; NOTES</b>	<b>SUPERVIS OR SIGN</b>
		<b>NO</b>	<b>Date</b>	(Name 1)	(Name 2)	(Name 3)	(Name 4)	(Name 5)	(Name 2)	(Name 6)	(Name 7)	(Name 8)	(Name 9)	(Name 10)		
1																
2																
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5																
6																
7																
8																



 	<b>DESIGN III</b> <b>GENERAL ARRANGEMENT,</b> <b>FIRE CONTROL &amp; SAFETY PLAN</b>		Doc. No 01/D3-GFS/II/2018
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# DESIGN III / General Arrangement & Safety Plan

## Assessment Report

**Authors:**  
**Design III lecturers**

**DEPARTMENT OF MARINE ENGINEERING**  
**FACULTY OF MARINE TECHNOLOGY - ITS**  
**2018**

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## 5. EXPECTED LEARNING OUTCOMES (ELO) FOR DESIGN III

1. ELO 4:  
Understand the theoretical concepts of engineering science, design, fabrication and installation, maintenance and repair, inspection and supervision on ship and other marine structures.
2. ELO 6:  
Apply the theoretical concepts of science, principles, and design engineering required for design and analysis of systems on ship and other marine structures.
3. ELO 7:  
Implement the qualitative and quantitative methods upon planning, process, and evaluations of maintenance and repairs required on ship and other marine structures.

## 6. PRE REQUISITE COURSES

Students must take the following pre-requisite courses before taking Design III ( ME141326) General Arrangement, Fire Control & Safety Plan. Here are the pre-requisites:

1. Shipbuilding & Construction I
2. Shipbuilding & Construction II
3. Design I (Regular & LJ)
4. Design II (Regular)
5. Ship Resistance & Propulsion
6. Marine Diesel & Propulsion Systems

## 7. ELEMENTS OF ASSESSMENT

The overall points is 100%. It is divided under several sections :

1. Report and Calculation (10%)  
Report structure must be based on the guidelines. All the chapter is completed as stated in the Guidelines. Other than those, there are several points such as (1) Structure and sentences. (2) Completion and contents. (3) Alignment of documents and drawing. (4) Compliance of calculations to References/ Rules/ Regulations/ Maker Recommendations that student needs to be write in their report
2. Drawing of General Arrangement (20%)

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The precision of drawing must be achieved in relation to the scale of the drawing. All the object is drawn properly and complete. Every lines, surface and object is drawn according to the actual item and it comply with the guidelines.

3. Drawing of Fire & Safety Plan (20%)

The precision of drawing must be achieved in relation to the scale of the drawing. All the object is drawn properly and complete. Every item is explained in the drawing.

4. Knowledge, Skills & Attitude (50%)

The design process and results must incorporate the existing condition of design, updated regulation. The students must have knowledge , skill and good attitude for the course. They must be able to (1) describe and demonstrate their work, (2) able to understand the correlation between each chapter content with their drawing, (3) Capable to explain their calculation and drawing and also the design concept, (4) Have good amount of assistance with their supervisor and (5) able to deliver their idea in clear way

## 8. CRITERIA OF ASSESSMENT

The scoring of Design III is based on the rules based on Rector of ITS Regulation no 15/2018 regarding Academic Regulation 2018

Number Grade	Alphabetical Grade	Numerical grade	Criteria
86 - 100	A	4	Excelent
76 - 85	AB	3.5	Very Well
66 - 75	B	3	Good
61 - 65	BC	2.5	Sufficient - Good
56 - 60	C	2	Sufficient
41 - 55	D	1	insufficient
0 - 40	E	0	Verry insufficient

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### 8.1 Report and Calculation of Design III (10%)

	<b>Aspects</b>	<b>Number Grade</b>
1	Conformity of report format	
2	Suitability and accuracy of calculation	
3	Compliance of calculations to References/ Rules/ Regulations/ Maker Recommendations / Project Guide	
4	Chapter I - Include all of this following : <ul style="list-style-type: none"> <li>•Calculation of Ship Resistance</li> <li>•Calculation of Propulsive Coefficient</li> <li>•Engine Power Calculated</li> <li>•Selection of the Engine and Gearbox (If needed)</li> </ul>	
5	Chapter II - Include all of this following : <ul style="list-style-type: none"> <li>• Principal of Ship Dimension</li> <li>• Volume of ships below waterline</li> <li>• Freeboard Volume</li> <li>• Decks Volume</li> <li>• Gross Tonnage calculation</li> </ul>	
6	Chapter III - Include all of this following : <ul style="list-style-type: none"> <li>•Calculation of Fuel Oil Tank Capacity → HFO (Storage, Settling, Service tank), MDO (Storage, Service Tank, Settling if any )</li> <li>•Calculation of Lubricating Oil Tank Capacity (Storage and Service)</li> <li>•Calculation of Fresh Water Tank Capacity</li> <li>•Calculation of Ballast Tank Capacity</li> <li>•Cargo Tank Calculation</li> <li>•Slop Tank (For Tanker ship)</li> <li>• Sewage Tank</li> <li>• Bilge Holding Tank</li> <li>•Sludge Tank</li> <li>•Lightweight Tonnage</li> <li>•Deadweight Tonnage</li> <li>•Ship Displacement</li> </ul>	

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	<b>Aspects</b>	<b>Number Grade</b>
7	Chapter IV - Include all of this following : <ul style="list-style-type: none"> <li>•Calculation of Anchor (Equipment number, Chain, Towline wire or rope, Hawser, Cable lifter, Motor Shaft)</li> <li>•Capstan (Tensile strength, RPM, Torque of capstan roller, power of capstan motor)</li> <li>•Rudder (Area, type, force, torque calculation)</li> <li>•Steering gear (Power calculation)</li> </ul>	
8	Chapter V - Include all of this following : <ul style="list-style-type: none"> <li>•Loading and Unloading System Based on Type of Payload and Hatch Cover</li> <li>•Including Crane or Pumps</li> <li>•Power calculation of Crane or pumps</li> <li>•System arrangement</li> </ul>	
9	Chapter VI - Include all of this following : <ul style="list-style-type: none"> <li>•Explanation for Deck Department crew job desc</li> <li>•Explanation for Engine Department crew job desc</li> <li>•Amount of Crew</li> </ul>	
10	Chapter VII - Include all of this following : <ul style="list-style-type: none"> <li>•Sleeping room</li> <li>•Mess room</li> <li>•Smoking room</li> <li>•Guest room</li> <li>•Sanitary facilities</li> <li>•Hospital accomodation</li> <li>•Laundry</li> <li>•Ship office</li> <li>•Galley and Pantry</li> <li>•Navigation room / navigation space</li> <li>•Chart room</li> <li>•Radio room / radio space</li> <li>•Battery room / ESEP</li> </ul>	

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	<b>Aspects</b>	<b>Number Grade</b>
	<ul style="list-style-type: none"> <li>•Equipment accomodation (accomodation ladder, vertical ladder, Inclined ladder, inner door, watertight door, round window, rectangle window)</li> </ul>	
11	<p>Chapter VIII - Include all of the navigation equipment as follow :</p> <ul style="list-style-type: none"> <li>•GMDSS</li> <li>•Gyro Compas</li> <li>•Marine Radar</li> <li>•Magnetic Compass</li> <li>•Auto Pilot</li> <li>•ARPA</li> <li>•Speed &amp; Distance Log Device</li> <li>•Echo Sounder</li> <li>•ECDIS</li> <li>•AIS</li> <li>•LRIT</li> <li>•Rudder angle indicator</li> <li>•VDR</li> <li>•Rate of turn indicator</li> <li>•Sound Reception System</li> <li>•GPS</li> <li>•Mast head Light</li> <li>•Side Lights</li> <li>•Stern Lights</li> <li>•Anchor Lights</li> <li>•Morse Lights</li> <li>•Day Shapes</li> </ul>	
12	<p>Chapter IX - Include all of this following:</p> <ul style="list-style-type: none"> <li>•Chain locker volume</li> <li>•Mud box area</li> </ul>	
13	<p>Chapter X - Include all of this following:</p> <ul style="list-style-type: none"> <li>•Fire Protection description</li> <li>•Fire main system</li> <li>•Local fire fighting</li> </ul>	

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	<b>Aspects</b>	<b>Number Grade</b>
	<ul style="list-style-type: none"> <li>•fire type based on materials</li> <li>•Class Division of Room and Room Explanation</li> <li>•Symbol and Definitions for item in chapter X</li> </ul>	
14	Chapter XI - Include all of this following: <ul style="list-style-type: none"> <li>•Escape route</li> <li>•Inflatable raft</li> <li>•Life buoy</li> <li>•Life buoy with self-igniting light</li> <li>•Life buoy with line</li> <li>•Life jacket</li> <li>•Line throwing appliance</li> <li>•Red star hand flares</li> <li>•Rocket parachute flare</li> <li>•Radar transponder</li> <li>•EPIRB</li> <li>•Two way radio telephone apparatus</li> <li>•Embarkation ladder</li> <li>•Muster station</li> <li>•EEBD</li> <li>•First aid kit</li> </ul>	
	Total	
	Average (Total/14)	G1

## 8.2 Drawing of General Arrangement (20%)

	<b>Aspects</b>	<b>Number Grade</b>
1	Conformity of drawing format	
2	Accuracy of drawing, scale and ships form	
3	Accuracy of design parameters	
4	Completeness and consistency of coding dan symbol	
5	Completeness of lines, item and object in the drawing	

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	<b>Aspects</b>	<b>Number Grade</b>
6	Engine, Propeller and Shaft are drawn properly,	
7	Decks, Loadline symbol and ships on side view are drawn properly	
8	Fuel Oil Tank including HFO (Storage, Settling, Service tank) and MDO (Storage, Service Tank, Settling if any ) and Gas fuel (if any), Lubricating Oil Tank Capacity (Storage and Service), Fresh Water Tank, Ballast Tank, Cargo Tank, Slop Tank (For Tanker ship), Sewage Tank, Bilge Holding Tank, Sludge Tank are drawn properly	
9	Anchor, Capstan, Rudder and Steering Gear are drawn properly	
10	Crane and/or Pumps for the loading unloading and Hatch cover are drawn properly	
11	Sleeping room, Mess room, Smoking room, Guest room, Sanitary facilities, Hospital accomodation, Laundry, Ship office, Galley and Pantry, Navigation room / navigation space, Chart room ,Radio room / radio space, Battery room / ESEP, Equipment accomodation (accomodation ladder, vertical ladder, Inclined ladder, inner door, watertight door, round window, rectangle window) are drawn properly	
12	GMDSS, Gyro Compas, Marine Radar, Magnetic Compass, Auto Pilot, ARPA, Speed & Distance Log Device ,Echo Sounder, ECDIS, AIS, LRIT, Rudder angle indicator, VDR, Rate of turn indicator, Sound Reception System,GPS, Mast head Light, Side Lights , Stern Lights, Anchor Lights, Morse Lights , Day Shapes are drawn properly	
13	Chain locker and Mud Box are drawn properly	
	Total	
	Average (Total/13)	G2



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### 8.3 Drawing of Fire & Safety Plan (20%)

	<b>Aspects</b>	<b>Number Grade</b>
1	Conformity of drawing format	
2	Accuracy of drawing, scale and ships form	
3	Accuracy of design parameters	
4	Completeness and consistency of coding dan symbol	
5	Completeness of lines, item and object in the drawing	
6	Fixed fire fighting, local fixed fire fighting, Portable fire fighting, and Class division on room arrangement are drawn properly	
7	Escape route, Inflatable raft, Life buoy, Life buoy with self-igniting light, Life buoy with line, Life jacket, Line throwing appliance, Red star hand flares, Rocket parachute flare, Radar transponder, EPIRB, Two way radio telephone apparatus, Embarkation ladder, Muster station, EEBD, First aid kit are drawn properly	
	Total	
	Average (Total/7)	G3

### 8.4 Knowledge, Skill and Attitude of student (50%)

<b>No</b>	<b>Aspects</b>	<b>Number Grade</b>
1	Describing and demonstrate their works and the design concept	
2	Explaining the document and drawing in detail	
3	Explaining the correlation between document contents to drawing	

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No	Aspects	Number Grade
4	Capability of estimation based on engineering logics	
5	Promptness and attitude	
6	Number of supervising and assistance	
	Total	
	Average (Total/6)	G4

Total calculation of final score is:

	weight (a)	Score (b)	Weighted Score $c = (a \times b)$
Aspect 1 (G1)	10%		
Aspect 2 (G2)	20%		
Aspect 3 (G3)	25%		
Aspect 4 (G4)	50%		
Final Score	100%	Total	$c1+c2+c3+c4$

Range Number Grade	86 - 100	76 - 85	66 - 75	61 - 65	56 - 60	41 - 55	0 - 40
Alphabetical Grade	A	AB	B	BC	C	D	E

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## 9. EVALUATION PERIOD AND EVALUATION METHOD OF DESIGN III

There are four periods of evaluation in Design III, the evaluation periods are:

- Progress I (Week 7)
- Progress II (Week 12)
- Progress III (Week 15)
- Final Exam (Week 16)

The example of the Report and Drawing of Design III Course could be seen on separate document : (070918 Design III – Example.pdf). While the example of Exam score sheet could be seen on document : (201218 Ubarampe\_1819\_UAS D3. Pdf)