

[MMC104] DESIGN FOR ADDITIVE MANUFACTURING

GENERAL INFORMATION

| | | | |
|------------------|--|--|---|
| Studies | MASTER'S DEGREE IN BIOMEDICAL TECHNOLOGIES | Subject | ? |
| Semester | 2 | Course | 1 |
| Character | OPTIONAL | Mention / Field of specialisation | ??? |
| Plan | 2023 | Modality | Face-to-face |
| Credits | 3 | Language | CASTELLANO |
| | | Total hours | 47.8 class hours + 27.2 non-class hours = 75 total hours |

PROFESSORS

| |
|---------------------------------|
| BASKARAN RAZKIN, MAIDER |
| AZPI-AURREKOETXEA NARBARTE, ION |

REQUIRED PREVIOUS KNOWLEDGE

| Subjects | Knowledge |
|--|----------------------------------|
| (No specific previous subjects required) | (No previous knowledge required) |

LEARNING RESULTS

| LEARNING RESULTS | KC | SK | AB | ECTS |
|--|----|----|----|----------|
| MMR-26 - To apply the knowledge acquired and your problem-solving skills in new, little-known or changing environments within broader (or multidisciplinary) contexts related to your area of study | | x | | 0,72 |
| MMR-28 - To communicate your conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way | | x | | 0,18 |
| MM13-2 - To propose the appropriate additive manufacturing technology for each biomedical engineering problem | | x | | 2,1 |
| Total: | | | | 3 |

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RMM129 [!] *Diseñar productos de fabricación aditiva mediante softwares de simulación.*

LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

17 h.

NCH

9,25 h.

TH

26,25 h.

EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

W

100%

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 17 h.

NCH - Non-class hours: 9,25 h.

TH - Total hours: 26,25 h.

RMM147 [!] *Define los objetivos, realiza la planificación para su consecución y su seguimiento sistemático coordinando su trabajo con los demás miembros del equipo.*

LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

1,3 h.

NCH

,7 h.

TH

2 h.

EVALUATION SYSTEM

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

W

50%

Presentation and defence of exercises, case studies, computer practical work, simulation practical work,

50%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

CH - Class hours: 1,3 h.
NCH - Non-class hours: ,7 h.
TH - Total hours: 2 h.

RMM145 [!] *Conoce y es capaz de aplicar las herramientas de resolución de problemas en el campo de la Ingeniería Biomédica con iniciativa, toma de decisiones, creatividad y razonamiento crítico.*

| LEARNING ACTIVITIES | CH | NCH | TH |
|--|--------|--------|------|
| Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams | 5,5 h. | 3,5 h. | 9 h. |

| EVALUATION SYSTEM | W | MAKE-UP MECHANISMS |
|---|-----|--|
| Individual written and/or oral tests or individual coding/programming tests | 40% | Observation (technical capacity, attitude and participation) |
| Co-assessment | 5% | |
| Prototype / Product | 55% | |

Comments: If the score of the defense is lower than 5, this evaluation item will be evaluated in its entirety (%100) with the score of the defense. A co-evaluation system will be implemented to adjust the score of the student based on his or her participation in the Project.

CH - Class hours: 5,5 h.
NCH - Non-class hours: 3,5 h.
TH - Total hours: 9 h.

RMM144 [!] *Analiza las variables intervinientes en la solución de los problemas y plantea acciones para lograr una situación estable asumiendo responsabilidades en el equipo de trabajo, afrontando contingencias y organizando y planificando tareas.*

| LEARNING ACTIVITIES | CH | NCH | TH |
|--|--------|--------|------|
| Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams | 5,5 h. | 3,5 h. | 9 h. |

| EVALUATION SYSTEM | W | MAKE-UP MECHANISMS |
|---|-----|--|
| Individual written and/or oral tests or individual coding/programming tests | 40% | Observation (technical capacity, attitude and participation) |
| Co-assessment | 5% | |
| Prototype / Product | 55% | |

Comments: If the score of the defense is lower than 5, this evaluation item will be evaluated in its entirety (%100) with the score of the defense. A co-evaluation system will be implemented to adjust the score of the student based on his or her participation in the Project.

CH - Class hours: 5,5 h.
NCH - Non-class hours: 3,5 h.
TH - Total hours: 9 h.

RMM130 [!] *Optimizar el proceso de fabricación aditiva mediante softwares de simulación.*

| LEARNING ACTIVITIES | CH | NCH | TH |
|---------------------|----|-----|----|
|---------------------|----|-----|----|

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

17 h.

9,25 h.

26,25 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 17 h.

NCH - Non-class hours: 9,25 h.

TH - Total hours: 26,25 h.

RMM146 [!] *Define el problema, el desarrollo de la solución, así como las conclusiones de manera eficaz, argumentando y justificando cada una de ellas, y haciendo un uso correcto del lenguaje, por escrito y de manera oral.*

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

1,5 h.

1 h.

2,5 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

50%

Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

50%

MAKE-UP MECHANISMS

Observation (technical capacity, attitude and participation)

CH - Class hours: 1,5 h.

NCH - Non-class hours: 1 h.

TH - Total hours: 2,5 h.

CONTENTS

1 - 3D personalized printing 2 - 3D printing of farmaceutical compounds 3 - 4D printing in medicine

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Technical articles
Class presentations
Video projections

Bibliography

3D Printing in Medicine; Edited by Dr. Deepak M. Kalaskar;
Woodhead Publishing; eBook ISBN: 9780081007266; Hardcover
ISBN: 9780081007174